

PUBLIC MEETING

IN RE:

GLMRIS REPORT

GREAT LAKES AND MISSISSIPPI  
RIVER INTERBASIN STUDY

- - - -

FRIDAY, JANUARY 24, 2014  
4:00 p.m.

ERIE COUNTY LIBRARY  
160 EAST FRONT STREET  
ERIE, PA 16507

- - -

PANEL:

DAVE WETHINGTON, P.E.  
U.S. ARMY CORPS OF ENGINEERS  
CHICAGO DISTRICT

COLONEL FREDERIC DRUMMOND, COMMANDER  
U.S. ARMY CORPS OF ENGINEERS  
CHICAGO DISTRICT

MODERATOR:

LAUREN FLEER

1 (Proceedings commenced at 4:05 p.m.)

2 MS. FLEER: Hi. Good afternoon. I  
3 would like to welcome everyone to this afternoon's  
4 meeting about the Great Lakes and Mississippi River  
5 Interbasin Study, otherwise known as GLMRIS.

6 My name is Lauren Fleer. I am with  
7 the Chicago District of the Army Corps of  
8 Engineers. I will be moderating this evening.

9 When you arrived this afternoon, you  
10 will have been offered a few different materials.  
11 First, on the green piece of paper is the agenda  
12 which identifies what we have planned for this  
13 afternoon.

14 Secondly, on a blue sheet of paper  
15 that identifies frequently-asked questions about  
16 the GLMRIS project, as well as other aquatic  
17 nuisance species control efforts currently under  
18 way by the Army Corps of Engineers.

19 And finally, you will see the summary  
20 of the GLMRIS Report. This summary is basically an  
21 abbreviated version of the much lengthier study we  
22 released earlier this month.

23 The full study, as well as the  
24 summary, are available on the GLMRIS Project  
25 website. That's [glmrис.anl.gov](http://glmrис.anl.gov). It's the first

1 web address identified in the back of the  
2 pamphlet. So you can go there for more  
3 information.

4           Let me introduce you to this  
5 afternoon's panel. First, on your farthest right  
6 is Colonel Frederic Drummond. He is the Commander  
7 of the Chicago District Army Corps of Engineers.  
8 To his right is Dave Wethington, who is the Project  
9 Manager for the Great Lakes and Mississippi River  
10 Interbasin Study.

11           After our panelists offer a brief  
12 presentation, we will have plenty of time to get  
13 your comments and questions and turn the floor over  
14 to you. Today's meeting is the sixth of nine  
15 public meetings that we have scheduled to discuss  
16 two things. We have two goals really.

17           The first is to present the results  
18 of the GLMRIS Report we have been developing for  
19 last several years.

20           Secondly, and most importantly, is to  
21 hear your comments and questions about the  
22 information presented in the GLMRIS Report. The  
23 Corps of Engineers will be collecting comments  
24 through March of this year.

25           So all the comments we hear all over

1 the U.S. that are presented at meetings like this,  
2 as well as comments submitted on the website, will  
3 be compiled on the website and be available to all  
4 the decision makers and everyone that wants to  
5 visit to the website.

6           If you want your comment to be  
7 formally included in this open-comment period, you  
8 will need to present your comment today at an open  
9 meeting like this one, or in writing, or on the  
10 GLMRIS website.

11           The yellow registration form  
12 available at the welcome desk will give you the  
13 opportunity to both register to make a comment here  
14 today, and it will give you instructions on how to  
15 submit a comment in writing by mail, if you choose  
16 to do it that way.

17           I would like to thank everyone again  
18 for being here today. And without further ado, I  
19 will hand it over to Colonel Drummond.

20           COLONEL DRUMMOND: Good afternoon,  
21 everybody. It's certainly my pleasure to be in  
22 Erie. About two weeks ago, I was directed by the  
23 Assistant Secretary of the Army to come up here and  
24 conduct this public meeting and to hear your  
25 voice. That's one of the reasons we are here.

1 I'm primarily here tonight to  
2 listen. I have been doing that quite well. I did  
3 five events in Michigan here in the last couple  
4 days, and they are certainly giving us a lot of  
5 good input. This is what this is all about. You  
6 heard there is a range of options. We are  
7 certainly interested in your input.

8 The Corps is excited to achieve  
9 another milestone. This milestone is called  
10 GLMRIS, the Great Lakes and Mississippi River  
11 Interbasin Study. This is a very complex study.  
12 It examines the opportunities to prevent aquatic  
13 transfer of many ANSs, not just fish like Asian  
14 Carp, but other species along the Great Lakes and  
15 Mississippi River divide, so between the Great  
16 Lakes and the Mississippi River.

17 The GLMRIS Report outlines a variety  
18 of potential prevention methods and presents  
19 evaluation criteria to help readers, such as  
20 yourself, distinguish among the alternatives we  
21 have in the report.

22 The purpose of the GLMRIS Report is  
23 to paint an objective picture of several  
24 alternatives and offer decision makers,  
25 stakeholders, and the public information about

1 those alternatives.

2           The GLMRIS Report does not make  
3 recommendations, nor does it put priority in any of  
4 the plans. Our GLMRIS team is one that spreads  
5 across the country. We worked pain-stakingly on  
6 this report with federal, state, nongovernmental  
7 and private stakeholders throughout the Great  
8 Lakes.

9           We strove to insure decision makers  
10 and the public to be well-informed on various ways  
11 to prevent the transfer of ANS through the Chicago  
12 Areas Waterway System.

13           This report is unique in comparison  
14 to Army Corps of Engineers reports in that it  
15 identifies a range of options that are adaptable  
16 for the incorporation of future technologies.

17           The prevention of the spread of  
18 aquatic nuisance species is what we call -- and you  
19 will hear this several times tonight -- shared  
20 responsibility among federal, state, local agencies  
21 as well as you, the public. The Corps remains  
22 dedicated to working alongside our partners and  
23 moving forward as our authorities allow.

24           So I will provide a few, quick  
25 bullets. We started this on the 6th of January.

1 That is when the report was delivered to Congress.  
2 On the 6th of January, we had 53 representatives at  
3 the Capitol. We briefed them; the same thing as  
4 we're doing here tonight. A lot of staffers were  
5 there.

6 We also conducted a webinar with 16  
7 different representatives from Chicago. So the  
8 information is out there for our federal  
9 representatives. This information has been pushed  
10 out over 7,000 media stations.

11 What you received when you came in  
12 tonight was a 25-page summary report. We have  
13 that. This is a very good snapshot. It will make  
14 you start thinking.

15 And we have online the actual report,  
16 which is 232 pages. If that's not enough, we have  
17 the Clancy novel, which is another 10,000 pages of  
18 very technical data.

19 Many people like the folks you see in  
20 this room up here on the stage actually took part  
21 in developing this. We had 19 different U.S. Army  
22 Corps of Engineers districts involved in this all  
23 the way from Jacksonville, Florida, all the way up  
24 to Seattle; well over a hundred different people  
25 involved in this.

1           The folks that actually put the  
2 writing and did the typing are the individuals you  
3 see in this room and on my staff. I also add, many  
4 of these individuals love the Great Lakes and are  
5 no different than anybody in this room. They  
6 remind me of it all the time.

7           They are just as passionate. They  
8 have kids that play in the Great Lakes. So you can  
9 rest assured, even though there are other districts  
10 outside the Great Lakes involved in this, they are  
11 going make sure that we protect this national  
12 treasure.

13           What I'm here to do tonight is to  
14 listen. I'm going to turn the floor over to the  
15 project manager of GLMRIS, and his name is Dave  
16 Wethington. He has been involved in this for some  
17 time. He is going to brief you about 18 slides.  
18 And we are going to open it up and hear what you  
19 have to say about the report.

20           I also like to tell folks, we are  
21 here to listen. I think you will see some unique  
22 things tonight. Then just sort of digest. There  
23 is a lot of information. Digest, and as you heard,  
24 you can go back online and submit your input on  
25 what you think and give us your advice.



1                   Without further ado, I will turn it  
2 over to Dave Wethington. Dave.

3                   MR. WETHINGTON: All right. Thank  
4 you, sir, and thank you all for joining us today.  
5 My name, again, is Dave Wethington. I am a Project  
6 Manager with the U.S. Army Corps of Engineers. I  
7 have been with the Corps for about 11 years.

8                   My background is in engineering, but  
9 I learned a lot about the biology and about  
10 aquatic species over the years. I have been  
11 helping lead a fantastic team of engineers,  
12 scientists, biologists, on trying to put together a  
13 range of alternatives.

14                  What I'm going to do today is spend  
15 15, 20 minutes talking to you about what is in the  
16 report, and talking about some of the different  
17 alternatives, how we got there, and how we came up  
18 with some of the time frames with regard to this  
19 range of alternatives.

20                  Before I get into the alternatives  
21 themselves, I want to make sure we have a common  
22 understanding with respect to the scope of the  
23 GLMRIS study. We received the authority to begin  
24 GLMRIS in November of 2007. That was through the  
25 Water Resources Development Act of 2007. In July

1 of 2009 we actually received funding to begin the  
2 study.

3                   The purpose of the study was to look  
4 at the range of options and technologies that are  
5 available to prevent the transfer of aquatic  
6 nuisance species between the Great Lakes and  
7 Mississippi River basins. Up here on the right-  
8 hand side, you see the outline of the brown color  
9 is that basin divide.

10                   Now, I'm going to spend most of the  
11 time speaking about the Chicago Area Waterway  
12 System. Before I do that, I want to spend a little  
13 bit of time talking about the breadth of that  
14 divide. It's about 1,500 miles. And the Corps of  
15 Engineers has done a lot of great work to identify  
16 what are the other potential pathways for species  
17 to transfer along that basin divide.

18                   Now, we identified 18 potential  
19 pathways that exist along that divide. And what is  
20 unique about this is the majority of them are what  
21 we call episodic pathways. So that means they  
22 primarily form when there is a significant rainfall  
23 or precipitation events near that basin divide that  
24 cause the headwaters of two adjacent streams to  
25 flood and create a temporary aquatic connection.

1                   Of those 18, a few of them are what  
2 we call a perennial connection, or a continuous  
3 connection. But to get to the magnitude of what  
4 we're talking about, it's more of a farmer's ditch  
5 or a drainage way, as opposed to the significant  
6 series of aquatic pathways that exist in the  
7 Chicago Waterway System.

8                   The goal of GLMRIS is to do two  
9 things. Number 1, to look at that range of options  
10 or technologies that were available to prevent the  
11 transfer of aquatic species between the basins, as  
12 well as when those specific options or technologies  
13 are implemented, what kind of impact do those  
14 measures, as we call them, have on the existing  
15 uses of the Chicago Waterway System, and if they  
16 have some sort of adverse impact and they cause  
17 harm to the existing uses, how do we appropriately  
18 mitigate for those adverse impacts.

19                   The state [] has certainly been a  
20 very important part of GLMRIS, as Colonel Drummond  
21 mentioned in his opening remarks. We try to be as  
22 open and transparent as possible. The reason we  
23 are coming to neighborhoods such as yours to  
24 discuss this is because we want to hear your  
25 input.

1                   In July of 2012 we received  
2 legislation. A kind of a syllabus of the purpose  
3 and goal of our study: It asked us to do a couple  
4 of different things. Number 1, to complete this  
5 report in a time frame of 18 months. We received  
6 the legislation on July 6th of 2012, and on January  
7 6, 2014, we turned in the report, exactly 18 months  
8 later.

9                   It also asked us to focus efforts on  
10 CAWS, the Chicago Area Waterway System. And the  
11 Chicago Area Waterway System, I will speak about in  
12 the next slide, is located in Chicago adjacent to  
13 Lake Michigan. It also asked us to evaluate  
14 hydrologic separation.

15                   The Chicago Area Waterway System, or  
16 CAWS, as we call it, is a series of aquatic  
17 pathways that form that primary connection between  
18 the Great Lakes and the Mississippi River Basin.

19                   There are five points numbered 1  
20 through 5, which the waters of the Great Lakes,  
21 Lake Michigan, have the opportunity to interact  
22 with waters of the Mississippi River Basin.

23                   What is unique about this system is  
24 that each of these five pathways eventually forms a  
25 confluence, or flows together into a single

1 receiving stream down here. All five of these  
2 points eventually find their way into this single  
3 receiving stream, the Chicago Sanitary and Ship  
4 Canal, which makes its way down towards the  
5 Mississippi River.

6                   So this point No. 7 we have  
7 highlighted -- this might be tough to read in the  
8 back -- that Point No. 7 is where we currently  
9 operate our existing electric barrier towards the  
10 control of Asian Carp species to try to prevent  
11 them from moving up into the Great Lakes.

12                   Now, we understand a little bit about  
13 the way the CAWS flows. We are talking about some  
14 of the very important uses of the Chicago Waterway  
15 System. There are a number of primary uses that we  
16 looked at in the Great Lakes and Mississippi River  
17 Basin Study.

18                   We looked at navigation to include  
19 commercial and cargo navigation, recreation  
20 navigation. We looked at water supply and water  
21 conveyance. It was news to me when I started the  
22 study that anywhere between 65 to 85 percent of the  
23 total volume of the river, of the Chicago  
24 Waterways, anywhere into here, is municipal-treated  
25 wastewater. I didn't know that. A significant

1 important use of the system is for conveyance of  
2 that wastewater stream.

3           Flood risk management is also is a  
4 very important tool of the Chicago Area Waterway  
5 System. While normally, water flows from any one  
6 of those points from Lake Michigan downstream  
7 toward the Mississippi River. During significant  
8 rainfall events anywhere in the Chicago area, we  
9 have the ability to what we call backflow or allow  
10 water to flow in both directions to alleviate  
11 significant flooding pressure on the 9.2 million  
12 residents of the city and surrounding suburbs.

13           Why that is unique is, we look at the  
14 potential changes that might be implemented by any  
15 one of the alternatives and how those different  
16 potential alternatives may impact these existing  
17 uses.

18           As I stated at the beginning, the  
19 Chicago Area Waterway System is the primary  
20 connection, primary aquatic connection, between the  
21 Great Lakes and the Mississippi River Basin.

22           The report itself is really a tool  
23 for decision makers. The GLMRIS Report provides a  
24 conceptual level of design, as well as a conceptual  
25 level of design for those potential mitigation

1 measures, those things that would need to be done  
2 to compensate for any adverse impact that it could  
3 potentially alternatively have on existing uses; as  
4 well as range of cost estimates that are  
5 commensurate with that kind of level of design.

6                   Now, with regard to the costs, what  
7 we are presenting is a conceptual level cost. So  
8 the best way to use this is to really compare them  
9 on the range of alternatives; additional detailed  
10 design and estimation of costs and really delving  
11 into each particular alternative may be necessary,  
12 or would be necessary, if one were to choose to  
13 move to construction to any one or more of these  
14 alternatives.

15                   As I stated, the best use of the  
16 GLMRIS Report is for a tool for decision making.  
17 We present these range of alternatives with  
18 evaluation criteria. The evaluation criteria  
19 includes things like: Duration to implement? How  
20 long does it take? What is the cost? What is the  
21 potential impact to economies? To the  
22 environment?

23                   We take all of this information and  
24 list it for every single alternative to help those  
25 who have significant interest to weigh the

1 different alternatives, to perform a trade-off  
2 analysis, to really begin this conversation we are  
3 having here today.

4                   What is the best alternative for a  
5 strategic fast forward with regard to aquatic  
6 species control? I'm going to spend a few minutes  
7 talking about how we came up with the range of  
8 plans that are the GLMRIS Report. We did three  
9 things.

10                   First of all, we identified the  
11 connections into Chicago, which is pretty easy. We  
12 knew where those aquatic connections were.

13                   We evaluated species. We looked at a  
14 range of over 200 different species that could  
15 potentially move into the two basins and identified  
16 35 which were a particular concern.

17                   Of those 35, we did a dedicated risk  
18 assessment looking at the probability and the  
19 consequences of these species transferring and  
20 becoming established in opposite basins and  
21 identified 13 that were of high or medium risk.

22                   These 13 were really the bad actors  
23 that we tried to use to help formulate the rest of  
24 these alternatives and really evaluate the  
25 effectiveness of the alternative plans we laid out



1 in the report.

2                   We also, once we identified these  
3 species, we identified controls -- herbicides,  
4 pesticides, physical barriers, screening, elements  
5 like that, that can be used to try to control the  
6 way the water moves or prevent the transfer of  
7 these species.

8                   So we took this information. We took  
9 the connections. We took the species, and we took  
10 the potential controls and put all this information  
11 together, as well as background information about  
12 economies and the environments surrounding the  
13 Chicago Area Waterway System, including the Great  
14 Lakes and Mississippi River Basin, and put that all  
15 together within the hundreds or thousands of pages  
16 that are in this report.

17                   Before I get into the technologies  
18 themselves or get into the alternatives themselves,  
19 let me talk a little bit about the technologies  
20 that I will be mentioning in the upcoming  
21 alternatives.

22                   Over on the far right-hand side, you  
23 will see a cartoon drawing of a physical barrier.  
24 I think this is pretty simple to understand. It's  
25 basically the physical barrier that prevents

1 untreated surface waters from mixing.

2                   We use concepts like an electric  
3 barrier over on the left-hand side, but we kind of  
4 cranked it up a notch little bit in GLMRIS and  
5 include an engineered -- construct an engineered  
6 channel along with it.

7                   The current way the electric barrier  
8 that the Corps of Engineers operates and maintains  
9 outside of Chicago is placed in just an open  
10 navigation channel. It's an unimproved bottom.  
11 It's really whatever the channel bottom was. And  
12 it had sides that were kind of sheet tile walls.

13                   Here in GLMRIS, we look at taking a  
14 design and modifying it such as we can construct a  
15 physical channel that is purpose-built for  
16 navigation. We can control the depth of the  
17 channel. We can control the material that that  
18 channel is built out of, of possibly insulated  
19 materials.

20                   And we would also have the  
21 opportunity to place electrodes allowing us to tune  
22 and optimize that barrier system for the species  
23 concern that we may have.

24                   We also came up with some novel  
25 ideas, things like the GLMRIS Lock in the upper

1 left-hand corner, which is a constantly flushing  
2 lock that uses ANS-treated water to flush a lock  
3 chamber, to clear out the aquatic species that may  
4 be floating in that chamber.

5                   So we use this technology that are  
6 singular or in combination with each other and pair  
7 them up to look at the ways that aquatic species  
8 will move through the channel and address those  
9 methods of moving.

10                   Over on the upper right-hand side of  
11 the slide is the very basic ways that species will  
12 move into aquatic pathways. They will swim, they  
13 will float, or they will hitch-hike. By  
14 "hitchhike," we mean they will adhere to the bottom  
15 of a barge or a recreational boat and move through  
16 the system in that manner.

17                   So each of these controls is targeted  
18 towards addressing one or more of those species or  
19 mechanisms.

20                   This is Alternative No. 1.  
21 Alternative Plan 1 is we call the A-Plan  
22 Alternative, the No New Federal Action plan. The  
23 name is misleading because "No New Federal Action"  
24 doesn't really convey the amount of action that is  
25 currently ongoing with regard to aquatic species

1 prevention and control.

2                   As part of the baseline, we wanted to  
3 evaluate what is being done? What is being done by  
4 the states? What is being done by the federal  
5 government? So that we can use that as a measuring  
6 stick, if you will, for additional risk reduction  
7 that is achieved by each of the subsequent  
8 alternatives.

9                   So it's important for us to kind of  
10 take the temperature and figure out what is going  
11 on currently and evaluate this baseline  
12 alternative. Some of the things that the Corps is  
13 responsible for as part of the baseline is the  
14 construction of the new electric barrier, or the  
15 operating of the existing electric barrier. And we  
16 also partner with other states and federal  
17 resources to work to control the population of  
18 specific species like the Asian Carp.

19                   Alternative Plan 2 is what we call  
20 the Nonstructural Control Technologies  
21 Alternative. Really, what this speaks to is  
22 potential measures that can be implemented; things  
23 that can be done that don't require the  
24 construction of a physical structure.

25                   So some examples are active

1 management. What is active management? Active  
2 management would include, perhaps, a fishing down  
3 of aquatic species and populations like Asian  
4 Carp.

5                   And it would include the  
6 identification of where potentially an aquatic  
7 plant currently exists before its poised to spread  
8 across the divide, and the application of aquatic  
9 herbicides to control that population of aquatic  
10 plant, like you see in that picture at the top.

11                   It includes education and outreach.  
12 Identification of why it's important to clean your  
13 boat, pull the plug after you pull it out of the  
14 water. Why it's bad to dump your bait bucket in  
15 the water. Educate on what are some of the good  
16 practices.

17                   It also includes laws and  
18 regulations, things that would make -- or do make  
19 it illegal to move aquatic species, as well as  
20 potential laws and regulations to help enforce some  
21 of those existing jurisdictions.

22                   Now, all of these, as you can  
23 imagine, are really shared responsibility. That's  
24 something that Colonel Drummond spoke of at the  
25 beginning. It's important for us to communicate

1 tonight. It will require -- we can make laws and  
2 regulations. We, as the federal government,  
3 appropriate authorities, can make laws and  
4 regulations. It's important for all of us as  
5 members of the public to abide by those laws and  
6 have that shared responsibility with respect to  
7 aquatic species transfer.

8 I'm not going to say a combination of  
9 education and laws and regulations are going to  
10 necessarily stop species from transferring. What I  
11 will tell you is they are effective best management  
12 practices. They are good ideas.

13 So we include these alternatives,  
14 these nonstructural alternatives, and each one of  
15 the subsequent alternatives that we outlined, if  
16 nothing else, we will help to bring about this  
17 awareness, and hopefully, delay that potential  
18 aquatic transfer.

19 Alternative Plan 2, Nonstructural  
20 Control Technologies, they could be implemented  
21 tomorrow given an agency has the appropriate  
22 authority and resources necessary; if the state DNR  
23 has the funding to go out and buy herbicides, it  
24 can be done like that.

25 The estimated cost is about \$68

1 million a year, and so this is in addition to what  
2 is currently being spent. This is an estimate  
3 based on current expenditures per state, average  
4 cost per state which these types of control  
5 technologies may be implemented.

6           Alternative Plan 3 is the first of  
7 our two technologies. Very simply, what this does  
8 is try to create control points in the Chicago Area  
9 Waterway System -- you can see the map on the left-  
10 hand side -- that creates control points that  
11 control the two-way transfer, the bi-directional  
12 transfer, of aquatic species at those individual  
13 control points.

14           How we do that? I mentioned earlier  
15 that water from Lake Michigan flows into the system  
16 and down the river in this manner (indicating). We  
17 create aquatic species treatment plants essentially  
18 to reroute the flow of channels to the treatment  
19 plant. It takes the water, pulls it through. It  
20 doesn't treat for things we commonly think of in  
21 wastewater treatment, but specifically for aquatic  
22 species.

23           We also, as part of this feature,  
24 include a GLMRIS Lock, that flushing lock chamber,  
25 in parallel or bookended with a pair of electric

1 barriers on either side. The electric barriers  
2 help keep fish within that control point.

3                   And then the lock helps take out all  
4 of those floating species like early life stages  
5 like fish eggs, or algae or floating plants, and  
6 pulls them from the system, maybe after a  
7 navigation barge or a recreational boat wants to  
8 pass through.

9                   Normally, the majority of the flow of  
10 the channel would go through that aquatic species  
11 treatment plant. We call that the dry weather  
12 flow. I am sure you can imagine that on a daily  
13 basis, it's pretty easy to estimate what that flow  
14 is going to be.

15                   But as you can also, I'm sure,  
16 imagine, there is a potential to have significant  
17 rainfall events that would cause that flow to  
18 fluctuate greatly.

19                   So by having this control point -- by  
20 only having the ability to pump so much water  
21 through, if we could construct some way to contain  
22 that water and convey it and hold it until we are  
23 able to treat it, you would either bypass this  
24 whole control point and allow species to freely  
25 transfer, or you would potentially cause a flooding



1 of a wide variety of local citizens within the  
2 area.

3                   So what we have done is constructed a  
4 network of tunnels and reservoirs that are  
5 sufficient to capture that flow in a 500-year storm  
6 event. We chose a 500-year event because of the  
7 significance of the events we have seen recently in  
8 the Chicago area, significant precipitation, and  
9 wanted to be able to really control that transfer  
10 of water and hold that back so that particular  
11 alternative doesn't cause an impact, an adverse  
12 impact, and cause flooding to the surrounding area.

13                   Because of that significant common  
14 reservoir infrastructure, you have a significant  
15 time to complete this alternative. It's about 25  
16 years, at a significant cost of about \$15 and a  
17 half billion.

18                   Alternative Plan 4 is the second  
19 technology alternative. We took this idea that we  
20 had before. Instead of having single two-way  
21 control points, we thought what can we do. Let's  
22 bookend the system, and let's spread the control  
23 points to areas adjacent to Lake Michigan up here  
24 and at the other end of the CAWS down here  
25 (indicating).

1 Remember, all these points up here  
2 eventually flow down to this point. So if you use  
3 this one-way checkpoint at or near the lake, as  
4 well as institute a one-way checkpoint as species  
5 are coming up, you are able to really control that  
6 transfer between the basins.

7 You also do something else. You  
8 create what we call a buffer zone, which is that  
9 area highlighted in white. This buffer zone is  
10 unique. It allows us to do a couple of things.

11 Number one, it allows us to monitor  
12 that area to see if there are potentially species  
13 transferring past those checkpoints.

14 And it also allows us to continue to  
15 operate the system, to continue to use it as we do  
16 today for water quality and conveyance, for  
17 navigation, as well as for flood risk management.

18 Imagine if you have a large rainfall  
19 event, a precipitation event, that happens  
20 somewhere in here. Because the water is being  
21 supplied to the system, it is ANS free. It's just  
22 precipitation. It's rainfall.

23 Controlling and monitoring the zone  
24 for aquatic species such as they are not anything  
25 that we assume needs to be present in there, you

1 can move water in either direction efficiently, as  
2 we currently do today.

3           Because we have a couple of different  
4 uses of the waterways, we have included physical  
5 barriers at two points at the lower part of the  
6 system. That is what these two purple bars  
7 represent.

8           We included physical barriers there  
9 because those channels are primarily not  
10 navigable. I'm sure you could get through them  
11 with a canoe or a Jon boat maybe. But for the  
12 most part, you don't have significant commerce or  
13 significant recreational traffic through there.

14           They are still used though as a flood  
15 risk management tool, so it's important to  
16 construct the appropriate infrastructure for those  
17 tunnels and reservoirs to be able to make sure that  
18 the residents around that area, Northwest Indiana  
19 and Southeast Illinois, aren't adversely impacted  
20 by those physical barriers of the channel.

21           So because it's a much smaller need  
22 to construct significant tunnel and reservoir  
23 conveyance structures, you see a reduced time to  
24 implement, as well as a reduced cost of \$7.8  
25 billion, compared to that first technology

1 alternative.

2                   Alternative Plan 5 is the first of  
3 our two hydrologic separation or physical  
4 separation barriers. What we have done is taken  
5 two different approaches with regard to where we  
6 place barriers on the system.

7                   Lakefront separation, as you can  
8 imagine, we place physical barriers at or near the  
9 existing lakefront, that lakefront interface. So  
10 you have a couple barriers which are right at Lake  
11 Michigan, as well as a couple that are placed  
12 adjacent to optimize for some of the uses, for some  
13 of the cargo traffic that can still come in this  
14 area.

15                   Now, because in this scenario you  
16 lose the ability to move water efficiently through  
17 the system, you do have the propensity to increase  
18 that risk of flooding to a lot of residents  
19 surrounding this area.

20                   Again, the construction of the  
21 significant infrastructure -- you have two large  
22 reservoirs, and there are many different things  
23 that need to be constructed. So the estimated time  
24 of completion is about 25 years, as well as an  
25 estimated cost of about \$18.4 billion.

1           So we have already seen a couple  
2 different scenarios where flood risk management is  
3 difficult nut to crack. That's really what is  
4 causing that long time to implementation as well as  
5 the significant cost.

6           So the team went back and looked at,  
7 okay, where can you put technologies or physical  
8 barriers in the channel that would help reduce that  
9 flood risk management, that cost. So we thought,  
10 hey, let's put them at or near where the existing  
11 water -- that existing hydrologic divide used to  
12 be.

13           We placed physical barriers after  
14 doing a lot of modeling. We used a lot of models  
15 for it. We selected two points and placed barriers  
16 that really did optimize the flood risk  
17 management.

18           The total amount of tunnel and  
19 reservoir infrastructure that we needed to  
20 construct to really alleviate the flood pressures  
21 was very small in this particular scenario.  
22 However -- there is always a "but" -- when you open  
23 up a significant part of the Chicago River and the  
24 Cal-Sag Channel to Lake Michigan, you also open up  
25 significant potential water quality impact.

1                   Now, these two ground squares up here  
2 and down here are significant water reclamation  
3 plants, or we call them wastewater treatment  
4 plants, that currently discharge downstream. If  
5 you were to not do anything, they would now  
6 discharge into Lake Michigan.

7                   Now, I'm sure that some will say that  
8 Chicago needs to get its act cleaned up, and water  
9 needs to be cleaned up better. I couldn't agree  
10 with you more. It's the best way to clean  
11 wastewater.

12                   However, what I will say is that the  
13 current discharge of wastewater to Lake Michigan  
14 from the Chicago Waterway System is zero. I will  
15 also say, there are significant steps that included  
16 the increased removal of nutrients like phosphorous  
17 and nitrogen and the disinfection of the water  
18 streams such that they are very similar to existing  
19 wastewater discharges like the City of Milwaukee or  
20 the City of Detroit into the Great Lakes.

21                   However, since currently, water  
22 stream does not go into the Great Lakes, even  
23 cleaning it up at that same level is a significant  
24 pollutant load to the Great Lakes.

25                   Lake Michigan, for example, has a

1 residence time of 99 years. That means it takes  
2 approximately 99 years for a single drop of water  
3 to make its way around the entire basin.

4           So if you have a significant load of  
5 water -- here we are talking approximately a  
6 combined total of about 600 or 700 million gallons  
7 per day of water -- you would still have some added  
8 load of contaminants; things that wastewater plants  
9 don't treat for like pharmaceuticals that would be  
10 potentially added to Lake Michigan or the Great  
11 Lakes in general.

12           Instead of doing that, what we have  
13 chosen to do with those green lines, those are  
14 tunnels to identify, to reroute that water  
15 discharge such that it flows much as it does today,  
16 to a point immediately downstream of where those  
17 physical barriers are.

18           We did this for another reason. I  
19 mentioned there is a significant percentage of the  
20 water stream that is made up by these water  
21 reclamation plants. And that water is important  
22 downstream; that water is important for  
23 navigation. And so by taking away that stream of  
24 water, you would lose a significant amount of water  
25 for potential downstream navigation.

1                   We have also done some additional  
2 work with regard to the scenario, looking at the  
3 captures, combined sewer overflows, as well as  
4 remediation and begin to look at eliminating or  
5 alleviating significant environmental impact to  
6 Lake Michigan or the Great Lakes in general.

7                   So all of these mitigation measures  
8 yield, again, estimate the time of completion,  
9 about 25 years with an estimated cost of \$15.5  
10 billion.

11                   Last two, Alternative Plans 7 and 8,  
12 are what we call our hybrid alternatives. They are  
13 combinations of technology and physical barriers.  
14 If you haven't noticed, you can basically split the  
15 Chicago Area Waterway System into an upper part and  
16 lower part. The upper part is up here; the lower  
17 part down here.

18                   So what these two different scenarios  
19 do -- this, for reference, is the Chicago Sanitary  
20 and Ship Canal, and this is the Cal-Sag Channel.  
21 These basically put a physical barrier on one part  
22 of the system, while leaving the lower part open,  
23 or vice versa.

24                   This project alternative, leaving the  
25 Cal-Sag open, leads to the Cal-Sag Channel, this



1 lower channel, open for navigation, while creating  
2 a physical barrier, as well as the necessary  
3 mitigation requirements for each of these  
4 technologies or physical barriers as part of the  
5 alternative.

6                   We look at, again, a significant time  
7 for completion of about 25 years and an estimated  
8 cost of about \$15.1 million. The converse, you  
9 switch where you place that physical barrier and  
10 where implement those technologies, and while you  
11 still have your significant time of completion, the  
12 cost is going to be less because of the less need  
13 for mitigation because of the way the uses and  
14 users are impacted in the system.

15                   I mentioned at the outset that really  
16 the best way to use this tool is to use it as a  
17 support tool for decision making. So these are  
18 some of the evaluation criteria I described.

19                   Things like the effectiveness of  
20 controls, economic impacts, environmental impacts,  
21 duration for implementation, total cost, each one  
22 of these evaluation criteria are outlined in detail  
23 for each one of the alternatives.

24                   Now, in the 25-page book you have,  
25 there is not a lot of discussion of evaluation

1 criteria. If you can to the website and look at  
2 the report, there will be a significant discussion  
3 with regard to each of these criteria, as well as  
4 tables that very well summarize and help look at  
5 those trade-offs among the different alternatives.

6 A couple considerations before I  
7 conclude today and turn the meeting over to you. I  
8 hope that I have done a good job in explaining the  
9 fact that mitigation, so making up those adverse  
10 impacts caused specifically by either one of these  
11 technologies or alternatives, is really the  
12 significant factor for the timing and the cost for  
13 each one of these alternatives. Residual risk will  
14 exist for any alternative we presented here today.

15 While something like physical  
16 separation may be very effective at preventing the  
17 transfer of species, there are still ways that  
18 species can transfer between the basins outside the  
19 aquatic pathway. Again, that's part of the shared  
20 responsibility that you and I have with regard to  
21 the strategic control of aquatic species.

22 If we look at the ways that various  
23 potential alternatives could be managed, how can we  
24 buy early risk reduction? There is one with the  
25 buffer zone alternative where you can implement it

1 in certain ways. So you can look at ways that that  
2 can be done within the report.

3           If you leave with nothing else this  
4 evening, again, that idea that aquatic species  
5 control really is a shared responsibility. The  
6 future implementation of any one of these  
7 alternatives is not only going to be a significant  
8 investment among various federal, state, and other  
9 resource agencies, but the investment of time and  
10 energy resources by each of us.

11           This continued collaboration is  
12 really important. That's why we are here today, to  
13 hear your input on which of these alternatives you  
14 have comments on and what you think together is the  
15 best path forward for aquatic species control.

16           As mentioned at the outset of the  
17 meeting, we are going to actually eleven different  
18 locations. Right now, we are at number six of  
19 eleven. We have yet to visit a couple of these  
20 cities, but we are trying to canvas both the Great  
21 Lakes and Mississippi River basin to hear the input  
22 with regard to the options in this report.

23           We do have a comment period through  
24 the 3rd of March. Comments, if you choose not to  
25 make one today, you can certainly go to the website

1 and enter a comment at any point in time until  
2 March 3rd. I mentioned feedback from you is very  
3 important.

4                   With that, I'm going to turn it back  
5 over to Lauren. And you can tell us what you think  
6 about this, and how you see that strategic path  
7 forward with regard to aquatic species control.

8                   (Applause.)

9                   MS. FLEER: Thank you for your  
10 presentations tonight. Let's now open up the floor  
11 to your comments and questions. We will start with  
12 the folks who had registered either on our website  
13 or here tonight.

14                   If you preregistered to speak, I will  
15 call your name. And I do apologize if I  
16 mispronounce your name. If you could stand;  
17 Kendall will approach with you a cordless mic. In  
18 order for everyone to have an opportunity to  
19 participate in tonight's discussion, we are going  
20 to ask to restrict your comments to about three  
21 minutes.

22                   After everyone has had an opportunity  
23 to speak, we will take another round of hands. And  
24 people can have another opportunity to speak  
25 again. The panelists may come back in and answer

1 any questions that are raised from the floor. As  
2 has been mentioned already, feel free to submit a  
3 comment in writing or our website if you choose to  
4 do it that way.

5 I would like to also mention that we  
6 have a court stenographer here tonight who is  
7 recording a full transcript of tonight's meeting,  
8 which will be available on the website.

9 If you would please first identify  
10 your name and any spelling that might be difficult;  
11 and secondly, any group that you may be  
12 representing here tonight; and lastly, your  
13 five-digit ZIP code. That will help us get a full  
14 account of all comments.

15 Without any further ado, I will first  
16 recognize Darran Crabtree followed by Nate Drag.

17 MR. CRABTREE: Darran, D-A-R-R-A-N,  
18 Crabtree. I represent The Nature Conservancy. And  
19 my ZIP code is 16403. Thank you for traveling out  
20 to Erie, and thank you for putting the study  
21 together. It's an impressive piece of work. I  
22 have not read it all. I read parts of the summary,  
23 but people that work with me have read it quite a  
24 bit. They are interested in this project. I'm  
25 going to read comments others have prepared. You

1 have probably heard some of this before.

2                   The cost of not working on a project  
3 like this -- there are billions of dollars, but the  
4 cost not doing something is not zero. The cost in  
5 the Great Lakes alone is estimated at hundreds of  
6 millions of dollars a year in terms of control,  
7 directly, and indirect costs, as well, that are  
8 very difficult to quantify.

9                   So money that is being spent on  
10 aquatic species management. Regardless of whether  
11 we invest more in this, I'm here to say we do need  
12 to invest more in aquatic nuisance species  
13 management.

14                   The fisheries of the Great Lakes are  
15 estimated at about \$7 billion a year. Economic  
16 growth is driven by fisheries. So aquatic basins  
17 that affect the fisheries of the Great Lakes have a  
18 significant impact on our economic livelihood.

19                   So I just want to point out that the  
20 GLMRIS study is important. It looks at a range of  
21 alternatives. I want to emphasize, we really do  
22 need to look at alternatives that address the  
23 pathways both out of Great Lakes, as well as  
24 into -- I think the issue -- the poster child right  
25 now is basically species coming into the Great

1 Lakes, but more invasive species go out of the  
2 Great Lakes to the Mississippi and other basins.  
3 So we have to address both ways of aquatic species  
4 transfer.

5                   As the main point I would like to  
6 make, I understand, 25-year timeline for a lot of  
7 these, which seems like a long time. But a 25-year  
8 timeline for a lot of these, I think the projects  
9 do address doing aquatic basin transfer from both  
10 directions. They seem like they address many of  
11 the species of concern.

12                   But the timelines to completion are  
13 just too long. I would encourage the Army Corps,  
14 working with other leaders and other partners, to  
15 look at interim solutions that might able to be  
16 implemented in a short time frame that might not  
17 produce the possibility of basin species transfer  
18 as close to zero as some of these others; but if  
19 you can get them enacted sooner, they might reduce  
20 some of the more timely risks right now; so interim  
21 solutions that could be implemented sooner. Thank  
22 you for coming out. I appreciate it.

23                   MS. FLEER: Thanks very much. I have  
24 Nate Drag followed by Eric Obert.

25                   MR. DRAG: Hi, I'm Nate Drag. I'm

1 with the Alliance for the Great Lakes. My ZIP code  
2 is 14222. I'm from Buffalo, New York. I want to  
3 thank the panel for having this public meeting and  
4 having the opportunity to talk.

5 I would like to take a moment to say  
6 that I think an error was made that there wasn't a  
7 public meeting held in the state of The York. I  
8 love coming down to Erie. It is a bit of a  
9 stretch. If you live in Ontario or Saint Lawrence,  
10 it's quite a drive. If you hadn't had an  
11 opportunity, stop in Buffalo.

12 I do have a few comments about the  
13 study. First of all, physical separation of the  
14 Great Lakes and the Mississippi River basin  
15 provides the most effective permanent resolution  
16 for stopping the species moving in and out of the  
17 Great Lakes, and flood mitigation and improve water  
18 quality.

19 Research by the Great Lakes  
20 Commission, in their report Restoring the Natural  
21 Divide, physical separation is economically  
22 feasible, especially when you consider eliminating  
23 the future expenditures on the control and  
24 management of the species once established.

25 The second issue I would like to



1 bring up, specifically concerning Asian carp, is  
2 this draws focus that this isn't just a Great Lakes  
3 issue. This is profiled on a national level for  
4 other important watersheds as well, specifically  
5 the Pennsylvania and Ohio River, with the Asian  
6 carp has been found in West Virginia in the Ohio  
7 River, so with the hopes of keeping them out of the  
8 Ohio, Allegheny, and Monongahela Rivers. While  
9 this study does not specifically address that, it  
10 does rise to the level of the issues in these other  
11 areas.

12                   Third, that it's important for this  
13 action to begin as soon as possible. As Darran  
14 pointed out, there are long timelines on this  
15 plan. Taking interim steps in the meantime or  
16 while working towards permanent separation, we urge  
17 the Army Corps and the federal government to take  
18 these steps.

19                   Finally, as a life-long resident on  
20 Lake Erie -- it's the tenth largest lake in the  
21 world. It's an amazing lake. And \$15 billion  
22 seems like a lot. We cannot afford not doing. The  
23 cost of no action at all, it will cost our  
24 communities much more down the road.

25                   Thank you for this opportunity and

1 for all your efforts with the Great Lakes.

2 MS. FLEER: Eric Obert.

3 MR. OBERT: 16505, Eric Obert,

4 O-B-E-R-T. I'm representing the Pennsylvania Sea

5 Grant Program. As you know, Sea Grants spent a lot

6 of time working on species education, outreach,

7 research, so forth.

8 In this case, I think our main

9 concern was with river studies, probably what

10 everybody else is thinking, Asian carp, and

11 stopping their arrival into the Great Lakes.

12 I would like to know if -- I didn't

13 look through the literature on your lock system.

14 Has this been tried before and proven effective? I

15 would like to know if it would work on the Ohio

16 River. As one gentleman here already talked about,

17 our concern about that.

18 As most of our thunder has taken by

19 our first two speakers, our concern, I love what

20 you have done, looking at all the alternatives.

21 The only question is speed; how soon can you get

22 this in place. I remember when the first electric

23 barrier was built on the Chicago Sanitary Canal,

24 and we were about three years late on that.

25 So I'm concerned that we get this

1 implemented and try to do as many things that we  
2 can in the interim that will prevent the Asian carp  
3 from obtaining entry to the Great Lakes. That's  
4 what I have to say.

5 MR. WETHINGTON: Thanks for coming  
6 out tonight. With regard to your question on the  
7 GLMRIS lock system, the concept, they have a  
8 flushing lock, it plugs flow. I mentioned, I'm a  
9 chemical engineer by training, and it's something  
10 that is very commonly used.

11 The idea of moving water through a  
12 batch process, clean out that system. Now, has it  
13 been implemented at a large lock scale specifically  
14 for aquatic species? No.

15 However, we do have a very large,  
16 dedicated research and development center in  
17 Mississippi. We spent time looking at the concept  
18 and looking at how the lock with the pumps and  
19 appropriate systems and the kind of flows. At  
20 least at the conceptual level, it is possible and  
21 looks like it could work.

22 Now, if we are going to move forward  
23 with building something like this, there would  
24 definitely need to be additional kinds of testing,  
25 modeling, etc., done to complete this and look at,

1 for example, what size pumps do you need, how long  
2 might it take to get a certain efficiency with  
3 regard to that removal of that aquatic species from  
4 that lock?

5                   Locks have been used in environmental  
6 processes; for example, for the control of salt  
7 water migration. So we have used lock structures  
8 for environmental issues before, but this is sort  
9 of a new kind of novel use, which it's a great  
10 concept, great idea, we think would be effective.

11                   MS. FLEER: Thank you. Next, I have  
12 Thomas Faneman (phonetic) followed by [REDACTED].  
13 Thomas F?

14                   UNIDENTIFIED PERSON: He just left.

15                   [REDACTED]: I would like to -- I'm  
16 sorry, [REDACTED], 16510. I would like to  
17 support the issue of the urgency of this thing.  
18 Twenty-five years is enough time really to flood  
19 all five lakes with carp. So you need to do  
20 something much more quickly than that.

21                   We have historically been always slow  
22 off the mark ever since the earliest days. We need  
23 to be a lot faster, especially since some of the  
24 reported DNA has been seen in the lake already.

25                   Secondly, I'm wondering in this

1 discussion if anybody has talked with the  
2 Canadians. Canadians get grumpy. They own about  
3 four of the five lakes. I prefer they own none of  
4 them, but they do.

5           They really do get agitated when  
6 America starts throwing their muscle around. They  
7 can be -- on a number of occasions I have seen them  
8 even be helpful. On other occasions, they are  
9 damned difficult to deal with, and I really want to  
10 reach for the .44 Magnum to solve the problem right  
11 there. But I think the Canadians need to be  
12 heavily involved in this thing.

13           Two organizations that might be  
14 helpful, the International Joint Commission, and  
15 from basically two perspectives, they put pressures  
16 on the governments, and sometimes it's worked;  
17 sometimes it hasn't. They also have a fairly good  
18 battery of science that run into this operation.

19           The other one, and the better of the  
20 two, is the Great Lakes Fisheries Commission, also  
21 valuable pressure. They are fishery scientists,  
22 and I have had something like 15 years of  
23 experience with them. They are focused on fish and  
24 really know their stuff, especially on how to  
25 poison the bad guys. And they have also had

1 significant concerns with electric barriers. Thank  
2 you.

3 MR. WETHINGTON: Thank you for your  
4 comments. The Canadians have actually been  
5 involved with the study and are very close partners  
6 with GLMRIS. We created a committee near the  
7 outset. There is a group of federal or state kind  
8 of governmental authorities that would be able to  
9 buy input into the study.

10 And we actually looked to include  
11 Canada, specifically International Joint  
12 Commission, and specifically Great Lakes Fishing  
13 Commission. So those organizations have high  
14 visibility of what has been going on with GLMRIS,  
15 and they are close partners of ours in looking at  
16 future options for implementation.

17 We worked with the scientists, with  
18 information released by Canada. So looking at a  
19 comprehensive solution, while this is a  
20 federally-funded study, so I can't say go ahead and  
21 have these kinds meetings in Canada. We definitely  
22 want to include our Canadian partners in regard to  
23 future options with regard to strategic control of  
24 aquatic species.

25 Thank you for your time.

1 MS. FLEER: That would conclude the  
2 list of preregistered speakers. I would like to  
3 welcome anyone who has not had a chance to  
4 register.

5 MS. McCORMICK: Hi. Elizabeth  
6 McCormick, 16415. I just had a question. I too  
7 had read that the DNA of the carp had, in fact,  
8 entered into the lake somewhere. Can you validate  
9 that information?

10 MR. WETHINGTON: With regard to the  
11 DNA, I do understand there have been reports of DNA  
12 in waters of the Great Lakes, but understanding  
13 exactly what that means is still very much  
14 undefined. The Corps of Engineers in partnership  
15 with the U.S. Fish and Wildlife Service and other  
16 research institutions are trying to delve further  
17 into what does DNA mean; what does that DNA  
18 detection in the water mean; is that a presence of  
19 live fish; is that presence of one or more or  
20 groups of fish, etc.

21 So we have done a lot of research and  
22 identified different ways -- begun to identify  
23 different ways that this DNA can make its way into  
24 the environment.

25 Specifically, in the Chicago

1 Waterway System, as I mentioned during my  
2 presentation, that a significant portion of it is  
3 wastewater. And we have done tests that  
4 demonstrate if you melt some ice that had Asian  
5 Carp DNA on it, and it goes down the pipe, you can  
6 pick up that signal at the other end of the pipe.

7           So how exactly we get DNA in the  
8 water is still being researched. But yes, there  
9 have been specific cases where researchers'  
10 information has identified DNA within the Great  
11 Lakes.

12           MS. FLEER: Are you ready?

13           MR. GRZASKO: 16415, Marty Grzasko,  
14 G-R-Z-A-S-K-O. I have a couple of questions. One,  
15 first of all, I have to admit, this is the first  
16 time I have seen this study at all. But I will  
17 look at it.

18           But the question that I have is, it  
19 looked like a lot of what you studied was the  
20 Chicago Area Waterways and mitigation there. Have  
21 you looked at anything in other areas of approach,  
22 that is, for instance, the Welland Canal, the  
23 invasive eels that arrived in Lake Erie through  
24 that port? And certainly, we didn't expect to see  
25 that when they first -- when the lamprey eels got



1 through. Is there any reason to expect we won't  
2 see other migrations through that source, for one?

3 And I have an additional question.

4 It seems like the focus right now is on the Asian  
5 carp, because they do pose a significant risk. My  
6 question is, is it illegal, legal, to raise them in  
7 any of the areas that border on the Great Lakes  
8 states, whether they are in farm ponds or whether  
9 they are in Canada?

10 Because mitigating them in waterways  
11 that you have shown is one thing, but if someone is  
12 raising them in a farm pond, and you get a  
13 significant rain event, and they wash back in --  
14 which is really how they got here now --

15 MR. WETHINGTON: Thank you. I will  
16 speak to both of your questions. Regarding  
17 pathways, our authority -- I think I mentioned it,  
18 but in order for the Corps of Engineers to  
19 implement any kind of a study or any kind of a  
20 construction project, we need two things: We need  
21 authority from Congress, and we need appropriations  
22 or resources from Congress.

23 So our authority for this study  
24 focused specifically on that interface between the  
25 Great Lakes and the Mississippi River, that basin

1 divide. Our focus was very specific and looking at  
2 methods to even prevent transfer across that basin  
3 divide.

4 We did identify a range of 18 other  
5 potential pathways outside of the Chicago Area  
6 Waterway System that would provide for potential  
7 species to transfer.

8 Now, I don't know if you missed the  
9 beginning of my presentation or not. I mentioned  
10 the majority of them were episodic. That means  
11 that they form as a result of a rainfall event, so  
12 if the headwaters in a couple streams are flowing  
13 together, as well as there is like farmers' ditches  
14 or drainage canals, things like that, that are very  
15 kind of simple to identify.

16 The Chicago Waterway System, we  
17 focused on that for a couple reasons. Number 1,  
18 it's very complex. It's where you need a lot of  
19 really kind of significant engineering and  
20 strategic control for those waterways.

21 In addition, we were told by Congress  
22 to look specifically at ways to prevent species  
23 transfer within the Chicago Waterways System.

24 I agree, there are other ways species  
25 can get into the Great Lakes. Coming from, for

1 example, the St. Lawrence Seaway historically is  
2 how a lot of species got into the Great Lakes.

3           Also, there is other routes that  
4 species can use to transfer outside of some of the  
5 residual risks. It could be airborne transport.

6 If we are not talking about Asian carp, we're  
7 talking about perhaps an nuisance algae; is - -  
8 there is a chance that birds can fly from one side  
9 to the other and transfer algae or a virus.

10           So there are a number of ways that  
11 species can transfer between basins that were  
12 outside the scope of what we were authorized and  
13 allowed to study. Our charge, our focus, was on  
14 how you look at that aquatic pathway, and how do  
15 you prevent -- try to prevent the transfer through  
16 that aquatic pathway.

17           Secondly, with regard to the legality  
18 of raising carp, I don't know 100 percent for sure  
19 on whether it is illegal to raise them. I don't  
20 believe it is. However, it is illegal to transport  
21 them across state lines, live fish. So it's  
22 illegal to transport live carp across state lines.

23           So I hope that answered your question  
24 with regard to Asian carp. Thank you.

25           MR. KISSELL: Ed Kissell,

1 K-I-S-S-E-L-L, 16508. What causes the Silver carp  
2 to jump?

3 MR. WETHINGTON: I'm an engineer by  
4 training. I am not a biologist. I believe it's a  
5 natural response to the agitation of the boat  
6 motor, is what they say. You can put that kind of  
7 noise, that sound reverberation, in the water, or  
8 what some of the fisherman do to find fish,  
9 electroshock to find a current in the water, that  
10 will also tend to --

11 MR. KISSELL: Why we don't we buy a  
12 lot of aerators and have them jump themselves to  
13 death?

14 My other question is, back -- in  
15 Washington, D.C. the White House had a meeting  
16 called the Carp Summit with federal and state  
17 officials, February 8, roughly, in 2010, with a  
18 multipronged attack with a \$78.5 million price tag  
19 to prevent the Asian carp from establishing  
20 populations in Lake Michigan.

21 Nancy Stutley, do you know who she  
22 is? She is the President's top person for  
23 environmental quality. She led the meeting. And  
24 there were a number of things that were supposed to  
25 be instituted.

1                   Have all of those been instituted,  
2 such as awarding a \$13.2 million contract to  
3 construct a concrete chain link fence in between  
4 Chicago Sanitary River and the shipping canal,  
5 opening the Chicago navigation locks less  
6 frequently, conduct physical electric shocking,  
7 testing 120 water samples per week? Have all of  
8 those things been done? This is four years ago.

9                   MR. WETHINGTON: Sure. I appreciate  
10 the question. In the past couple of years, a  
11 couple of things have changed. A lot of the intent  
12 of what you are describing has been implemented. I  
13 know, for example, that 13-mile fence to help  
14 reduce that risk of significant flooding has been  
15 implemented. I know there is a significant  
16 monitoring effort that is applied.

17                   I don't want to speak exactly for  
18 Ms. Stutley. She represents the White House  
19 Council on Environmental Quality. And so I can  
20 only speak for the Army Corps of Engineers. But  
21 there have been a number of those that have been  
22 implemented.

23                   MR. KISSELL: You also had  
24 interference, or the Supreme Court was called in to  
25 make some decisions. Obama basically spoke against

1 some of the efforts to redirect the river one way  
2 or the other.

3                   Also, did not Dick Cheney get a  
4 waiver to allow dumping of ballast water over and  
5 above what the regulations were supposed to be  
6 without too many people knowing about that until  
7 the new administration came in and put a stop to  
8 it?

9                   MR. WETHINGTON: Sir, I have no  
10 knowledge of those activities.

11                   MR. DRUMMOND: I'm trying to  
12 understand what you are asking. If you are asking  
13 about -- the coast guard is the one that manages  
14 the ballast water, and they do have policies in  
15 place. But if you want to know anything more in  
16 depth on that, I can ask the coast guard and get  
17 you information. What else?

18                   MR. KISSELL: That was it, that there  
19 was interference of a waiver that was gotten by  
20 Vice President Cheney to allow ballast water to be  
21 dumped within the boundary lines of the United  
22 States that caused possible invasive species to  
23 enter the water, freshwaters.

24                   COLONEL DRUMMOND: I will echo what  
25 Dave just said. Normally, in the last few days, we

1 have had a representative from the CEQ. His name  
2 is John Goss. For the last three and a half years,  
3 everything we do in this entire study, he is linked  
4 throughout the whole process.

5 It's unfortunate he couldn't make it  
6 tonight because of travel arrangements. He would  
7 have went through in detail; he would talk or hit  
8 upon many of the things you just discussed.

9 MS. FLEER: Would anyone else like to  
10 offer a comment or ask a question?

11 MR. PARTSCH: Roger Partsch,  
12 P-A-R-T-S-C-H, 16502. Is there local people to  
13 talk to in the state of Pennsylvania, or go to the  
14 Army Corps of Engineers? Is there anything local  
15 if I have a comment or question on the Asian carp?

16 MR. WETHINGTON: I think there is a  
17 couple ways to answer that. Number one, would be  
18 comment on our website. There is an e-mail address  
19 up there. That will get you to myself or a member  
20 of my team to help answering questions.

21 With regard to the study, if you have  
22 questions or concerns; if you want to talk about,  
23 say, 25 years is too long, or voice those concerns,  
24 putting a comment on our website is a good way to  
25 do that.

1                   We are going to compile that  
2 information from what we heard from members of the  
3 public and other agencies and submit that as part  
4 of the public record. You are obviously welcome to  
5 speak to your elected officials. I hope that  
6 answers your question.

7                   COLONEL DRUMMOND: I think another  
8 good avenue is your state DNR, Department of  
9 Natural Resource. I can tell you they are heavily  
10 involved. We have ACRCC meetings often, and they  
11 are a part of it. There are several different  
12 states that are involved in these weekly and  
13 biweekly ACRCC meetings.

14                  MR. WETHINGTON: In addition to the  
15 website you see behind me, there is another website  
16 that is specifically run by that White House  
17 Council. It's asiancarp.us. There is other  
18 information specifically on Asian carp and some of  
19 the Asian carp activities that were mentioned  
20 tonight.

21                  MR. KissellL: I did see an article on  
22 TV about our senator, Bob Casey, was talking about  
23 how much money he was going to spend. My question  
24 was, is anybody directing Erie or close by in the  
25 DNR?



1 MR. WETHINGTON: I guess there is a  
2 gentleman next to you that might be able to answer  
3 your question.

4 MR. BURCH: I would be happy to  
5 respond. My name is Kelly Burch, B-U-R-C-H. I  
6 wear a couple different hats. I'm the Regional  
7 Director for Pennsylvania Department of  
8 Environmental Protection, and under my office is  
9 the Office of the Great Lakes. This is Jim Grazio  
10 sitting next to me; he is the Great Lakes  
11 biologist. Fisheries Commission, the Fish and Boat  
12 Commission is also represented here, Chuck Murray  
13 in the back seat.

14 I am also Pennsylvania's  
15 Commissioner, too, on the Great Lakes Commission.  
16 We receive briefings from the Corps. We will be  
17 meeting with them Tuesday in Chicago. You have  
18 done a terrific job keeping us up to date. If you  
19 would like some local contacts, myself, Jim Grazio,  
20 we would be more than happy to meet with you.

21 [REDACTED]: [REDACTED] again. What  
22 has the response been from First Nations? I'm  
23 assuming you have only talked with tribes on this  
24 side and fisheries, tribal fisheries?

25 MR. WETHINGTON: That's correct.

1 [REDACTED]: Did you talk with the  
2 Canadians?

3 MR. WETHINGTON: No. When we  
4 initiated this study, we did federal agency  
5 scoping, as well as private scoping, and sent  
6 letters out to the Native American tribes within  
7 the United States. This is a 100-percent fully,  
8 federally-funded project. Our authority is within  
9 the Continental USA.

10 So we did involve many tribes. We  
11 actually went to Grand Traverse a couple times. We  
12 had consultations with a couple of the different  
13 tribes up there. So we kept them engaged as much  
14 as they wished to be engaged.

15 MR. ZAWADZKI: Bob Zawadzki,  
16 Z-A-W-A-D-Z-K-I. Now we know that the fish are  
17 making their way up the drainages, what is being  
18 done commercially, and what is the marketability of  
19 the Asian carp?

20 MR. WETHINGTON: Commercially, it's a  
21 tough scenario here with regard to specific fish.  
22 Traditional American culture, we don't like fish  
23 that are bony, for example. Asian carp primarily  
24 is very bony. I have eaten Asian carp. They are  
25 difficult to prepare if you want to have them

1 without the bones. You can grind them up.

2 In all honesty, there is not a whole

3 lot of market for them within the United States.

4 The State of Illinois has partnered with other

5 agencies with regard to the Asian carp to try and

6 subsidize commercial fishing to reduce the

7 population, specifically. And they are trying to

8 use those fish for some sort of beneficial use,

9 whether it's fertilizer -- there is different ways  
10 to potentially market them.

11 I guess the one kind of cautionary

12 note, is that if you develop a market for Asian

13 carp, then who are the ones to create and sustain

14 that? What we really want to do, what most of us

15 want to do, is eliminate or make extinct the Asian

16 carp, if that were a possibility.

17 So there has to be some good ideas

18 about maybe putting a bounty on it. If I get \$5 a

19 head for every Asian carp I turn in, heck, I'm

20 going to go throw a few more out and hope they

21 spawn so I can make some more money. That's

22 something we have to be careful of, the economies

23 of the Asian carp specifically.

24 COLONEL DRUMMOND: Governor Quinn had

25 a saying out there for a while, "If you can't beat

1 them, eat them." The concept is out there. Even  
2 in the city of Chicago, every year we do the Taste  
3 of Chicago. One year we had a famous chef come  
4 in. He put together like 800 of these Asian carp  
5 burgers. But we quickly realized, we are all about  
6 prevention. We don't want to create a market. We  
7 want to get rid of them.

8           If you have a chance, go on the  
9 Illinois DNR website. They have done extensive  
10 netting operations. You would have heard that from  
11 John Goss, I know. Hundreds and hundreds of hours  
12 and tons and tons. And they are noticing a  
13 dramatic effect on the baseline of Asian carp,  
14 which right now is about 55 miles down from Lake  
15 Michigan.

16           I put things in characterization of  
17 risk, so these things are about 55 miles down from  
18 Lake Michigan. They have not moved. That front  
19 line has not moved since 2006. We don't know why.  
20 It could be because there are two significant lock  
21 chambers between the Great Lakes and the front  
22 line.

23           It could be the 37 miles of the  
24 Sanitary Ship Canal which was safely built in the  
25 late 1800s is not conducive to any type of

1 responding to Silver carp and or bighead carp. So  
2 the State of Illinois, the DNR is definitely  
3 involved, as well as many of the other DNR  
4 fisheries and a whole host of other agencies.

5 MS. FLEER: Please.

6 MS. GRANT: Kelly Grant, 16502. So  
7 even focusing on Asian carp, specifically the  
8 silver and the big head, but what about the Grass  
9 Carp? It's my understanding there are grass carp  
10 in the Sandusky River, and they do have the  
11 potential to keep breeding. I was wondering if you  
12 addressed this at all in your study.

13 MR. WETHINGTON: Because we  
14 identified the potential for reducing populations  
15 in both basins, the grass carp was not a target  
16 species.

17 Again, part of our charge was to look  
18 at how to prevent transfer. The grass carp was  
19 specifically taken out of the early study because  
20 of the fact they are established in both basins.

21 MS. FLEER: Any other questions or  
22 comments?

23 MR. WELCH: William Welch, 16506. I  
24 would like to know in terms of the worst case  
25 scenario for flooding, was that taken into

1 consideration? I haven't read the reports. I just  
2 wondered if that was the worst case, flooding.

3 In other words, we have had some  
4 major flooding in the Midwest. I'm wondering  
5 whether or not that has been considered.

6 MR. WETHINGTON: As a potential  
7 pathway for --

8 MR. WELCH: Yes.

9 MR. WETHINGTON: Sure. So when we  
10 looked at creating various alternatives,  
11 specifically with regard to, you know, what  
12 magnitude, we actually used a 500-year storm as  
13 kind of our standpoint, our benchmark.

14 And the reason why we used the  
15 500-year storm is because in the past five years,  
16 we have had at least three or four storm events  
17 within the Chicago area that were at or greater  
18 than the 100-year event.

19 So what we have also seen is the  
20 potential for significant precipitation events like  
21 a 100-year storm that stack up one after each  
22 other.

23 And so we wanted to make sure that  
24 the infrastructure we create, especially to  
25 mitigate the flood risk, as well as the design of

1 the actual barrier, was sufficient to stand up to  
2 significant, potential, natural, Mother Nature-type  
3 events. So we are using the 500-year analysis with  
4 regard to that.

5 MR. KISSELL: Ed Kissell. How did  
6 you determine a 500-year?

7 MR. WETHINGTON: I appreciate that.  
8 I want to make sure everybody has a chance to speak  
9 in the microphone.

10 Again, we used that 500-year level of  
11 analysis, so there are different precipitation  
12 volumes. You look at the duration of event, you  
13 know, whether it's a 24-hour, 12-hour, etc.

14 You look at -- there are charts that  
15 the hydrologic engineers, they tell me that they  
16 are out there, and they are at specific measures,  
17 specific statistics they use to determine what is  
18 a, quote/unquote, a 500-year event.

19 It's a very kind of established,  
20 systematic-type of analysis. So it's based on  
21 history. Granted, there is the potential for  
22 climate change to change how often an event  
23 happens, so maybe calling it 500 years is not quite  
24 right.

25 But we wanted to make sure we

1 included appropriate mitigation design for  
2 significant precipitation events that would  
3 essentially allow us to keep that control, that  
4 control point.

5 COLONEL DRUMMOND: There is a couple  
6 interesting websites. One is USGS. You go in  
7 there. Actually, nowadays, they have monitors. We  
8 are living in a high-tech world. They use monitors  
9 specifically throughout the Chicago land area. And  
10 it is amazing. The minute the rain starts falling  
11 in Chicago, I'm online watching.

12 As Dave said, in the last two and a  
13 half years, we have had two major events. Last  
14 April we had one 6-inch sustained downpour. You  
15 saw it in the news. We had to backflow the Chicago  
16 River, as David mentioned. Part goes out in the  
17 Great Lakes, which we don't want it to do. And the  
18 other part goes down the Mississippi River. But  
19 the technology's out there where we can track this  
20 very, very closely.

21 MS. FLEER: Any other questions or  
22 comments tonight?

23 MS. ROSSMAN: Chris Rossman, 16510.  
24 Are there any known episodes of Asian carp right  
25 now in the Great Lakes right now?



1 MR. WETHINGTON: Yes. Historically,  
2 they have been pulled from Lake Erie. It was 2000  
3 or 2003, there were recorded instances. If you go  
4 to the website, they have those records.

5 What is important to note is that  
6 single fish are not sustained populations. That's  
7 really what we are trying to do, not sustain  
8 populations.

9 So just because you pull one or two  
10 fish out or something similar, while it's certainly  
11 a concern, to date, we have not seen a sustaining  
12 population of carp in the Great Lakes.

13 MS. FLEER: We have plenty of time to  
14 entertain more questions and comments.

15 MS. GRANT: Kelly Grant, 16502. I  
16 was hoping you could address something I was  
17 mulling over. And that would be the concern for  
18 increased spread of nuisance species during the  
19 construction project. Do you have specific plans  
20 to mitigate kind of the flow of these ANS during  
21 the construction?

22 MR. WETHINGTON: Sure. The level of  
23 design is conceptual. So we are still a ways off  
24 from getting to specific construction  
25 alternatives. There would be additional design, as

1 necessary, in order to come up with any kind of  
2 plan.

3                   There are ways -- and I think maybe  
4 what you are asking is, are there interim measures  
5 that could be implemented? If you wanted to look  
6 at a long-term solution by physical separation,  
7 there are certainly ways -- like we outlined things  
8 like nonstructural measures. Some of the  
9 technology alternatives like the buffer zone  
10 concept. Which to achieve risk reduction in both  
11 directions, we looked at about a ten-year total  
12 time construction.

13                   However, again, our charge, our  
14 authority is to look at that transfer and  
15 direction. If we were to look in perhaps more  
16 detail with regard to specific concerns like Asian  
17 carp or any other species, there may be ways to  
18 optimize some of these scenarios to achieve early  
19 risk reduction with the new technologies and a  
20 quicker time frame than what is outlined in these  
21 alternatives.

22                   However, what is important to  
23 remember is you are going to implement the physical  
24 separation scenario. Building a dam in the  
25 waterway is not going to take five years. It's

1 that those measures, those steps that need to be  
2 taken to make sure there is not a significant flood  
3 risk that is basically imposed upon the  
4 metropolitan area, or significant environmental  
5 harm that could be imposed upon a significant  
6 natural resource like Lake Michigan, that would  
7 take that amount of time to achieve.

8 MR. OBERT: Eric Obert. 16505. I  
9 would like to know if there was consideration in  
10 taking like, say, in the Chicago Sanitary Canal, to  
11 just establishing like a mile dead zone, using a  
12 chemical or something like that; or even do it  
13 intermittently in conjunction with the electrical  
14 barrier or something along those lines.

15 MR. WETHINGTON: Sure. We work very  
16 closely with the federal and state regulatory  
17 agencies responsible for administering and  
18 enforcing the Clean Water Act. In our selection  
19 and refinement of potential scenarios, something  
20 like a dead zone was actually one of those kind of  
21 concepts that we looked at.

22 However, based on input, and based on  
23 what would be regulatorily acceptable, we chose to  
24 define those potential control technologies. And  
25 very honestly, based on the input of those federal

1 and state regulatory agencies, compromising the  
2 intent of the Clean Water Act in such a way was not  
3 something that was as palpable as perhaps other  
4 potential alternatives.

5 MR. WELCH: William Welch,  
6 W-E-L-C-H. I would like to know whether or not --  
7 I haven't seen any studies on natural preservation  
8 or whether there is any kind of genetic  
9 modification. I wondered if they have seen that.  
10 I glanced through this, and I didn't see that.

11 MR. WETHINGTON: Sure. So what we  
12 were suggesting in terms of genetic modification,  
13 perhaps the nonstructural measures, controlling the  
14 specific species concerned. Again, if we were to  
15 further implement, there would be more work on that  
16 necessary. I do know that the Asian carp was the  
17 reporting committee, among other agencies; state  
18 resource agency, U.S. Geological Survey. They were  
19 looking at different ways to perhaps track carp, or  
20 modify pellets that can be put in the water that  
21 can only be dissolved by the gut material of Asian  
22 carp; and specifically biobullets, is what we call  
23 them, to specifically address Asian carp.

24 So there is a lot of other research.  
25 It's not a research or development. Our charge was

1 to look at available options and technologies to  
2 prevent the transfer of species.

3 So anything in the research or  
4 development phase was screened out because there is  
5 not a body of knowledge specifically necessary for  
6 us to say this is feasible and implementable. But  
7 there is research that is ongoing.

8 MR. WELCH: Where would that be  
9 found?

10 MR. WETHINGTON: I would start at  
11 asiancarp.us with regard to a lot of those Asian  
12 carp specific activities.

13 MR. ZAWADZKI: Bob Zawadzki, 16506.  
14 When a Asian carp dies, do they float to the top or  
15 go to the bottom? Some fish float to the top when  
16 they're dead; some fish don't come to the top.

17 MR. WETHINGTON: Either way. Some  
18 will sink; some will float.

19 MS. FLEER: Any other hands out  
20 there?

21 COLONEL DRUMMOND: This is free  
22 discussion. If you have anything on your mind, we  
23 are more than willing to talk about it; the  
24 barriers, the effectiveness of the barriers.

25 But we are in our final design of the

1 third barrier, which will eventually -- the  
2 demonstration barrier that you talked about, I tell  
3 folks there is nothing like it in the world. It is  
4 an electronic marvel. It is very effective.

5           We have roughly 236 fish that act and  
6 seem like Asian carp, but they are not. And we put  
7 telemetry devices in them. And we had a little  
8 over 3.6 million detections with no passage through  
9 the barrier. So it gives me a little bit of  
10 confidence that it's working.

11           Our job, our charge, is to prevent  
12 it, and that's exactly what we are after. We are  
13 closely working with Fish and Wildlife. We work  
14 very closely with the USGS. I might add, it's  
15 probably the flattest organization among agencies I  
16 have seen in 34 years. John Goss goes right to the  
17 CEQ. Dave Wethington goes directly to the  
18 Assistant Secretary of the Army. It is about as  
19 flat as you can get.

20           And that just reiterates the  
21 importance of what we are trying to do here. I  
22 mean, there is a significant amount of individuals  
23 that are involved in this, and they all want to do  
24 the right thing. That is what impresses me.  
25 Everybody is talking about the same thing.

1           In our case, we are talking about the  
2 interbasin transfer of 13 species; with the Asian  
3 Carp Committee, we are talking about Asian carp.  
4 They are focused on Asian carp.

5           In fact, they are going to have  
6 another meeting on the 19th of February just to  
7 start taking this report and asking themselves, how  
8 can we go about taking care of this.

9           If you feel like you don't have a  
10 question, we will be around here for a while. We  
11 can meet one on one. Your voice is important. I  
12 would ask, and I tell most folks that come in, it  
13 is very complex. Our intent really is to get this  
14 information out. Let you sort of digest it. Let  
15 you go back to your agencies and sort of open up  
16 the 25 pages, but more importantly, take a look at  
17 the 232 pages, and let your voice be heard.

18           We were in a meeting the night before  
19 last. There has been just a lot of very good  
20 intuitive-type questions that come up by citizens  
21 that are very concerned about their livelihood.  
22 Yes, sir.

23           MR. KISSELL: Ed Kissell. How have  
24 the attendances been so far on the meetings with  
25 the audiences? Few people? A lot of people?

1 COLONEL DRUMMOND: It has been very  
2 good. In the state of Michigan, it was a packed  
3 house, the entire place; a lot of senatorial,  
4 congressional, representatives, state and local  
5 agencies. And we normally, in every state that we  
6 go to, we meet with the state agencies as well. So  
7 there is a lot of discussion going on. And if John  
8 Goss was here, he would just say, continue that  
9 discussion, because right now, there are voices out  
10 there about this particular problem.

11 MR. WETHINGTON: Sure. Specifically,  
12 in Chicago, in Ann Arbor and Cleveland, we have  
13 seen upwards of 100 to 120 participants at each  
14 meeting. Milwaukee and tonight in Erie, the same,  
15 about 35, 45 or so folks.

16 So overall, the response has been  
17 very positive. We did a scoping session for this  
18 study about three, four years ago. And we would go  
19 to some meetings where there could a handful of  
20 people that show up. Even those this is a light  
21 attendance, this is fantastic. You folks are  
22 here. We have a serious passion about this. I  
23 appreciate your time.

24 MR. WELCH: Welch. After the comment  
25 period and the study is completed, how is this



1 going to impact any type of action?

2 MR. WETHINGTON: Sure. Easy answer  
3 is, in order, again, for the Corps of Engineers to  
4 implement anything, to construct a project, we  
5 would need additional authorization and  
6 appropriation. That is what we look for in  
7 Congress to further go out and construct  
8 something.

9 In the interim, it's important for  
10 yourselves, for your state representatives, for the  
11 resource agencies, to really have a discussion  
12 about what is the best path. We have a whole range  
13 of different options.

14 If we are going to spend more time  
15 studying it, it makes more sense to study one or  
16 two of these options in more detail and flush them  
17 out based on that input. So really, the next steps  
18 really involve having that collaborative  
19 discussion, listening to what you have to say,  
20 taking into consideration the comments on the  
21 website, and using that information.

22 MR. KARUBA: Mark Karuba (phonetic),  
23 16501. I think it was a year or two ago, I went  
24 online to look at some of the issues in Chicago in  
25 terms of waterways, and it was enlightening to me

1 to see how much water flows through that city.

2 I was taken aback for those that use  
3 recreational purposes was basically wastewater  
4 running through the city. I also found that there  
5 was a large problem the Chicago Area Water System  
6 had in dealing with its wastewater; dealing with  
7 the rain water runoff that it had. And a little  
8 bit of rain seemed to produce some level of  
9 flooding somewhere in Chicago. A stepdaughter of  
10 mine lives in Chicago.

11 That would seem to be inherently a  
12 part of this solution in dealing with Chicago and  
13 their water systems and looking at barriers of one  
14 kind or another.

15 My knee-jerk reaction last year,  
16 looking at that hydrologic barrier, cut it off, and  
17 cut off that access to the Mississippi, to Lake  
18 Michigan and Lake Erie; Erie is vulnerable from the  
19 east and the west.

20 And the water system issue,  
21 commercial value of that access to the Chicago area  
22 and the Midwest and the rest of the Great Lakes,  
23 seems to be a part of the problem I haven't heard  
24 addressed yet.

25 When I looked at this a year or two

1 ago, it looked like a railroad yards and cranes and  
2 shipping areas in Chicago. Moving from the  
3 dependence and moving goods by water versus going  
4 back to moving them by truck and rail, would seem  
5 to be something that should be considered with all  
6 this.

7           You are shifting a culture -- you are  
8 looking to shift a culture commercially and  
9 recreationally from one way to another, whatever  
10 modifications you make on those waterways.

11           I would like some comment on that,  
12 please.

13           MR. WETHINGTON: Sure. Again, I want  
14 to speak to the existing state of the waterways.  
15 When we did this baseline assessment, our first  
16 alternative, we looked at what kind of improvements  
17 are going to be made. There several different  
18 types of projects that are currently being  
19 implemented toward the improvement of water  
20 quality, etc. And we included those as part of  
21 that baseline.

22           So it's really important to remember  
23 is while there may be opportunities for  
24 enhancement, when we look at the mitigation  
25 required for any one of these alternatives, we did

1 not provide any additional benefit. We did not try  
2 to provide additional flood risk buy-downs for the  
3 residents of Chicago for any environmental  
4 benefit. In GLMRIS, we wanted to make sure there  
5 weren't adverse impacts. I know there is a nuance  
6 there, but it's very important to understand.

7                   With regard to move into commerce,  
8 currently, we do an evaluation of baseline for  
9 waterway traffic. It is statistically more  
10 efficient to move goods via waterways; however, we  
11 have seen that if certain actions are taking like  
12 blocking waterways, that they would likely move off  
13 the waterway to rail or to truck. But it is  
14 certainly more efficient per pound via waterways as  
15 opposed to via truck.

16                   MR. DALZELL: Bob Dalzell, 16403.  
17 D-A-L-Z-E-L-L. The Colonel mentioned that the  
18 front of the Asian carp is about 55 miles down from  
19 Lake Michigan. And it may be due to the two locks  
20 that are involved in there.

21                   Has any thoughts been done to maybe  
22 retrofit those locks or do something in those locks  
23 that it may have, you know, an impact on the carp?

24                   MR. WETHINGTON: Sure. That's part  
25 of the one of the alternatives. The idea of the

1 lock in addition to the electric barrier, that's  
2 part of an alternative.

3                   However, in order for the Corps of  
4 Engineers to implement, to construct any kind of  
5 modification, we need authority from Congress, we  
6 need those appropriations to come. That's  
7 certainly one of the concepts.

8                   MR. KIM: Michael Kim, 16505. This  
9 is off the topic of the carp. I was surprised I  
10 didn't see the harmful algae blooms as one of the  
11 13 problem areas, and is that because it's limited  
12 just to Lake Erie?

13                   MR. WETHINGTON: No. The reason you  
14 probably did not see that as a potential harm to  
15 Great Lakes is because it's already established in  
16 the Great Lakes. So we are looking -- again,  
17 charged to prevent the transfer.

18                   If there were a number of different  
19 algae that were identified as potentially being  
20 from the lakes to the Mississippi River basin, they  
21 would be the likely ones that are identified. I'm  
22 not sure of the specific species, which algae you  
23 were speaking of. But there were a couple  
24 different algae that were potentially a high to  
25 medium risk for transfer to Mississippi River from

1 the Great Lakes.

2 MR. KIM: I got the e-mail blast  
3 throughout the summer, and I noted the first time  
4 since I have been following it, I saw it reach the  
5 central basin of Lake Erie last year, and they  
6 found it in a place this year in Presque Isle Bay.

7 I've lived along the lake for twenty  
8 years. I have seen the dramatic change in the  
9 whole ecosystem with all of the species. That one  
10 seems particularly troublesome for people to fish  
11 in a dead zone.

12 MR. WETHINGTON: Right. We looked at  
13 identifying the species. We identified 35 which  
14 are a particular concern. All of that specific  
15 research is on our website. If you look for the  
16 aquatic species white paper, that speaks in detail  
17 to the range of species. It also lists a great  
18 amount of references that were used to identify  
19 these species.

20 So based on what my biologist or  
21 scientists tell me, those 35 are the potential  
22 ones. Of the 35, 10 are from the Mississippi River  
23 basin to the Great Lakes, and 25 from the Great  
24 Lakes down to the Mississippi River basin. What  
25 each of the 25 are -- I remember a lot of things,

1 but I don't remember those. Thank you. Sorry  
2 about that.

3 MS. FLEER: Any last questions or  
4 comments? I want to encourage people to utilize  
5 this time to make your voices heard. We are  
6 assimilating all these questions and comments for  
7 the public record. Please don't be shy.

8 MS. ROSSMAN: Chris Rossman. You  
9 said March 3rd is the deadline for people to offer  
10 comments. What is the deadline to get something  
11 started, a decision to be made, and where is the  
12 money coming from?

13 How is it going to be appropriated?  
14 Is it national? Are the states going to  
15 contribute? How is this going to be done? And  
16 when? Is there a time frame that a decision will  
17 be made, and then the monies appropriated, and then  
18 all the work to be decided; how to do it, all the  
19 labor involved. What is the time frame for it?

20 MR. WETHINGTON: That's a good  
21 question. It is asked a lot. Right now, we are  
22 taking public input. As I mentioned a couple of  
23 times tonight, this whole idea about aquatic  
24 species control, the Corps of Engineers had a  
25 specific set of authorities, and we had a specific

1 set of missions areas and we get our authorities  
2 from Congress.

3                   So in order for us to rule out an  
4 instruction of something, we need to have specific  
5 legislation. In addition, we have legislation that  
6 says we are authorized to go through with this, as  
7 well as appropriations for that. That's how the  
8 Corps of Engineers, how the agency is funded.

9                   The majority of our projects are cost  
10 share, when we do the construction. And so now  
11 Congress can change that. Congress can say a  
12 project is 100 percent federally funded. I  
13 certainly am not going to speak on behalf of  
14 Congress. I'm telling you how it traditionally  
15 works.

16                   There is various alternatives, very  
17 complex, maybe more a non-federal responsibility  
18 than the federal responsibility. So before we get  
19 to working out all of those individual details, we  
20 need to decide on what is that.

21                   As much as I would like to be able to  
22 tell you I have a timeline for that decision  
23 making, it's impossible for me to tell you how in  
24 the state of Michigan and the state of Minnesota  
25 and all the agencies, Chicago, how those agencies



1 will come together and on what collaborative floor  
2 they will come together with.

3 I will tell you we are making efforts  
4 to make sure everybody is at the table on behalf of  
5 the White House Asian Carp Committee, which has a  
6 lot of those different states, different federal  
7 agencies, the local owners and operators, so all of  
8 those agencies do have collaborative bodies.

9 Also, there are other collaborative  
10 bodies that represent the people. There are  
11 different ways we can potentially try to achieve  
12 this collaborative effort.

13 This report came out on January 6th.  
14 We really have been trying to let everybody know  
15 what is in the report and how what are the options  
16 and potential costs and timelines. Now we have a  
17 lot of this information, we are having the  
18 discussion now. As much as I would like to say,  
19 this is the timeline, right now, we don't know.

20 But what I have heard, there is a  
21 sense of urgency. We heard in the state of  
22 Michigan and Cleveland and heard here tonight that  
23 25 years may be too long. While an engineering  
24 solution will say it may take up to 25 years to  
25 complete something, it doesn't mean we have to wait

1 that amount of time before we can do something in  
2 the interim. So having this conversation is very  
3 important.

4 A number of these plans, baseline for  
5 construction, does start in 2017. But that assumes  
6 there is some sort of a vision and it allows some  
7 time for necessary conclusion of detail design and  
8 so on. So that's certainly a best case scenario.  
9 But again, I cannot speak on behalf of Congress.

10 COLONEL DRUMMOND: He doesn't like  
11 when I start asking him questions. But to continue  
12 the conversation, so he talks about authorization  
13 of appropriation, all that has to be worked out.

14 What I will tell you is I do have  
15 authorization and do have the appropriations for  
16 the current electric barrier system that works.  
17 That's the good thing. Meanwhile, we have to have  
18 some sort of consensus, and your state  
19 representative, your congressional representative,  
20 all very in tune with this right now. I think this  
21 is a very good time for us to continue forward.

22 The other thing I mentioned, and Dave  
23 hit on it a little bit, when he talks mitigation,  
24 in Chicago we have several reservoirs. One of them  
25 stores about 10 billion gallons. It's being

1 built. It's taking a long time.

2                   When he talks mitigation, we have  
3 some pretty good data on exactly how long it  
4 takes. When you start talking GLMRIS lock, it's a  
5 new technology. Although our research and  
6 development center says it can happen, as I said  
7 earlier, it's more money, and we have to figure out  
8 it all out.

9                   MR. WELCH: Welch. Many of the locks  
10 I have been in recently, they have hydro facilities  
11 like part of the river and type of hydro -- the  
12 question is, with these barriers, what you just  
13 mentioned, reservoirs, is that one kind of  
14 incentive so that you can actually have some kind  
15 of product as a hydro, as a by-product so you get  
16 more money to do this.

17                   Are there -- on the Mississippi there  
18 is locks all over the place and Ohio River, and  
19 there has been proposed on a number of them to put  
20 in one of the river hydro facilities. And one of  
21 the questions is would these carp, are they somehow  
22 jamming the intakes or causing problems in  
23 operation of the locks down South?

24                   MR. WETHINGTON: The answer to the  
25 hydro power, the Chicago area and surrounding area

1 is very flat. In order to get a good kind of a  
2 extremely good speed of water, you need to have a  
3 change in elevation. So doing hydropower in this  
4 area on this river basin is really not practical.

5 With regard to Asian carp jamming up  
6 locks, that has not been anything that we have seen  
7 or experienced. The mechanic lock is very strong.  
8 If there is, by chance, a carp in that split second  
9 when the gate is closing, probably a carp sandwich.

10 MR. BAUER: David Bauer, 16335. I  
11 apologize if you have addressed this already. I  
12 wondered if there was a generally-accepted,  
13 scientific model that illustrates the impact of the  
14 Asian carp as we are trying to educate people how  
15 it fits on commercial fishing, native species and  
16 so forth.

17 MR. WETHINGTON: With regard to the  
18 specifics, we did not look at modeling  
19 consequences. It is very detailed. There is a lot  
20 of information with regard to Asian carp. But even  
21 with that wealth of information, there is very  
22 little that is known with certainty. There have  
23 been other agencies that have tried to model that.  
24 I know the Great Lakes Fishing Commission put  
25 together a model of their own with regard to that.

1                   There have been other academic-based  
2 models on viability of nutrients and how carp might  
3 potentially affect the lakes. But most important,  
4 there is a lot of unknowns. And the intent of the  
5 study, the authority it was given, recognizes it's  
6 probably a bad idea. That's why we have been given  
7 the authority to look at range of options. With  
8 regard to specific models, nothing was developed as  
9 part of it.

10                   MS. FLEER: If I don't see any  
11 additional comments or questions -- please do  
12 indicate now if you have any more. But if I don't  
13 see any more, I think we will move to conclude  
14 tonight's meeting. We will be available and hang  
15 out for a while. Come and talk to us afterward.

16                   Before anything, I want to thank  
17 everyone for your participation tonight. It's  
18 guiding to solve this problem. I will give our  
19 panelists the opportunity to make a few concluding  
20 remarks if they would like to.

21                   COLONEL DRUMMOND: Thank you very  
22 much. And for everybody here, your voice is  
23 important. Coming in today, the gentleman in the  
24 back said, "Have you ever been to Erie?" I said  
25 no. As I was coming in -- I'm very observant. I

1 spend a lot of time in airplanes, whether I'm  
2 jumping out of them or doing something else.

3           The beauty is evident here. And like  
4 I said earlier, everybody on my team is just as  
5 concerned about the Great Lakes as everybody in  
6 this room. Throughout this two and a half years I  
7 have been involved in this process, and  
8 unfortunately, normally, the project -- the program  
9 manager for this who sits in my higher  
10 headquarters, also was the commander of the Chicago  
11 District. We call him the 61st commander; I'm the  
12 63rd. We have been in Chicago since 1983.

13           It's my charge to insure we are doing  
14 the best we can for everybody. That's a unique  
15 thing about the Corps of Engineers. I wear this  
16 uniform. I'm neutral. I put facts out there and  
17 gather the facts and do the best thing for  
18 everybody.

19           This has been a very interesting and  
20 long-term discussion, that one thing we have heard  
21 across the board is timeliness. So I know that's  
22 going to get resonated all the way up to the higher  
23 headquarters and probably come down to Dave to try  
24 to address.

25           I might add, John Goss, yesterday he

1 was in Chicago with Metropolitan Water Reclamation  
2 District discussing this whole thing with the board  
3 of directors. So you can tell, there is multiple  
4 moving fronts here.

5                   And I do appreciate your time. And  
6 like I said earlier, we will stick around and  
7 answer individual questions. Feel free to ask any  
8 one of us if you have anything else. Thank you  
9 very much.

10                   MS. FLEER: Thanks again. One last  
11 note, please. Bare in mind, our public comment  
12 closes on March 3rd. If you haven't had an  
13 opportunity to submit a comment, check the website  
14 or pick up the yellow comment registration form  
15 available at the table. There is plenty of other  
16 interesting reading material available on the  
17 table. Help yourself. Thanks again.

18                   (Proceedings concluded at 6:10 p.m.)

19

20

21

22

23

24

25

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

REPORTER'S CERTIFICATE

I HEREBY CERTIFY that I was present at the proceedings of the above-captioned matter and there reported stenographically the proceedings had and the comments produced. I further certify that the foregoing is a true and correct transcript of my stenographic notes.

\_\_\_\_\_  
Jenny L. Scalise  
Court Reporter



Capital Reporting Company  
Great Lakes and Mississippi River Interbasin Study Public Meeting 01-24-2014

<u>          </u> \$	77:8	3.6 70:8	8 32:11 52:17
<b>\$13.2</b> 53:2	<b>16506</b> 61:23 69:13	<b>34</b> 70:16	<b>800</b> 60:4
<b>\$15</b> 25:16 41:21	<b>16507</b> 1:12	<b>35</b> 16:16,17 72:15	<b>85</b> 13:22
<b>\$15.1</b> 33:8	<b>16508</b> 52:1	78:13,21,22	<u>          </u> 9
<b>\$15.5</b> 32:9	<b>16510</b> 44:16 64:23	<b>37</b> 60:23	<b>9.2</b> 14:11
<b>\$18.4</b> 28:25	<b>18</b> 8:17 10:18 11:1	<b>3rd</b> 35:24 36:2	<b>99</b> 31:1,2
<b>\$5</b> 59:18	12:5,7 50:4	79:9 87:12	<u>          </u> A
<b>\$68</b> 22:25	<b>1800s</b> 60:25	<u>          </u> 4	<b>aback</b> 74:2
<b>\$7</b> 38:15	<b>19</b> 7:21	<b>4</b> 25:18	<b>abbreviated</b> 2:21
<b>\$7.8</b> 27:24	<b>1983</b> 86:12	<b>4:00</b> 1:10	<b>abide</b> 22:5
<b>\$78.5</b> 52:18	<b>19th</b> 71:6	<b>4:05</b> 2:1	<b>ability</b> 14:9 24:20
<u>          </u> 1	<u>          </u> 2	<b>44</b> 45:10	28:16
<b>1</b> 11:9 12:4,19	<b>2</b> 20:19 22:19	<b>45</b> 72:15	<b>able</b> 24:23 25:9
19:20,21 50:17	<b>20</b> 9:15	<u>          </u> 5	26:5 27:17 39:15
<b>1,500</b> 10:14	<b>200</b> 16:14	<b>5</b> 12:20 28:2	46:8 57:2 80:21
<b>10</b> 78:22 82:25	<b>2000</b> 65:2	<b>500</b> 63:23	<b>above-captioned</b>
<b>10,000</b> 7:17	<b>2003</b> 65:3	<b>500-year</b> 25:5,6	88:3
<b>100</b> 51:18 72:13	<b>2006</b> 60:19	62:12,15	<b>academic-based</b>
80:12	<b>2007</b> 9:24,25	63:3,6,10,18	85:1
<b>100-percent</b> 58:7	<b>2009</b> 10:1	<b>53</b> 7:2	<b>acceptable</b> 67:23
<b>100-year</b> 62:18,21	<b>2010</b> 52:17	<b>55</b> 60:14,17 76:18	<b>access</b> 74:17,21
<b>11</b> 9:7	<b>2012</b> 12:1,6	<u>          </u> 6	<b>account</b> 37:14
<b>120</b> 53:7 72:13	<b>2014</b> 1:9 12:7	<b>6</b> 12:7	<b>achieve</b> 5:8
<b>12-hour</b> 63:13	<b>2017</b> 82:5	<b>6:10</b> 87:18	66:10,18 67:7
<b>13</b> 16:21,22 71:2	<b>232</b> 7:16 71:17	<b>600</b> 31:6	81:11
77:11	<b>236</b> 70:5	<b>61st</b> 86:11	<b>achieved</b> 20:7
<b>13-mile</b> 53:13	<b>24</b> 1:9	<b>63rd</b> 86:12	<b>ACRCC</b> 56:10,13
<b>14222</b> 40:2	<b>24-hour</b> 63:13	<b>65</b> 13:22	<b>across</b> 6:5 21:8
<b>15</b> 9:15 45:22	<b>25</b> 25:15 28:24	<b>6-inch</b> 64:14	50:2 51:21,22
<b>16</b> 7:6	32:9 33:7 55:23	<b>6th</b> 6:25 7:2 12:6	86:21
<b>160</b> 1:12	71:16 78:23,25	81:13	<b>act</b> 9:25 30:8 67:18
<b>16335</b> 84:10	81:23,24	<u>          </u> 7	68:2 70:5
<b>16403</b> 37:19 76:16	<b>25-page</b> 7:12	<b>7</b> 13:6,8 32:11	<b>action</b> 19:22,23,24
<b>16415</b> 47:6 48:13	33:24	<b>7,000</b> 7:10	41:13,23 73:1
<b>16501</b> 73:23	<b>25-year</b> 39:6,7	<b>700</b> 31:6	<b>actions</b> 76:11
<b>16502</b> 55:12 61:6	<u>          </u> 3	<u>          </u> 8	<b>active</b> 20:25 21:1
65:15	<b>3</b> 23:6		<b>activities</b> 54:10
<b>16505</b> 42:3 67:8			56:19 69:12

<p><b>actual</b> 7:15 63:1  <b>actually</b> 7:20 8:1  10:1 35:17  46:4,10 58:11  62:12 64:7 67:20  83:14  <b>adaptable</b> 6:15  <b>add</b> 8:3 70:14  86:25  <b>added</b> 31:7,10  <b>addition</b> 23:1  50:21 56:14 77:1  80:5  <b>additional</b> 15:9  20:6 32:1 43:24  49:3 65:25 73:5  76:1,2 85:11  <b>address</b> 3:1 19:8  38:22 39:3,9,10  41:9 55:18 65:16  68:23 86:24  <b>addressed</b> 61:12  74:24 84:11  <b>addressing</b> 19:18  <b>adhere</b> 19:14  <b>adjacent</b> 10:24  12:12 25:23  28:12  <b>administering</b>  67:17  <b>administration</b>  54:7  <b>admit</b> 48:15  <b>ado</b> 4:18 9:1 37:15  <b>adverse</b> 11:16,18  15:2 25:11 34:9  76:5  <b>adversely</b> 27:19  <b>advice</b> 8:25  <b>aerators</b> 52:12  <b>affect</b> 38:17 85:3  <b>afford</b> 41:22</p>	<p><b>afternoon</b> 2:2,9,13  4:20  <b>afternoon's</b> 2:3  3:5  <b>afterward</b> 85:15  <b>against</b> 53:25  <b>agencies</b> 6:20 35:9  56:3 59:5 61:4  67:17 68:1,17  70:15 71:15  72:5,6 73:11  80:25 81:7,8  84:23  <b>agency</b> 22:21 58:4  68:18 80:8  <b>agenda</b> 2:11  <b>agitated</b> 45:5  <b>agitation</b> 52:5  <b>ago</b> 4:22 53:8  72:18 73:23 75:1  <b>ahead</b> 46:20  <b>airborne</b> 51:5  <b>airplanes</b> 86:1  <b>algae</b> 24:5 51:7,9  77:10,19,22,24  <b>Allegheny</b> 41:8  <b>alleviate</b> 14:10  29:20  <b>alleviating</b> 32:5  <b>Alliance</b> 40:1  <b>allow</b> 6:23 14:9  24:24 54:4,20  64:3  <b>allowed</b> 51:13  <b>allowing</b> 18:21  <b>allows</b> 26:10,11,14  82:6  <b>alone</b> 38:5  <b>alongside</b> 6:22  <b>already</b> 29:1 37:2  42:16 44:24</p>	<p>77:15 84:11  <b>alternative</b>  15:11,24 16:4,25  19:20,21,22  20:12,19,21  22:19 23:6  25:11,15,18,19  28:1,2 32:11,24  33:5 34:14,25  75:16 77:2  <b>alternatively</b> 15:3  <b>alternatives</b>  5:20,24 6:1  9:13,17,19,20  14:15,16  15:9,14,17  16:1,24 17:18,21  20:8 22:13,14,15  32:12 33:23  34:5,11,13,23  35:7,13 38:21,22  42:20 62:10  65:25 66:9,21  68:4 75:25 76:25  80:16  <b>am</b> 2:6 9:5 24:12  52:4 57:14 80:13  <b>amazing</b> 41:21  64:10  <b>America</b> 45:6  <b>American</b> 58:6,22  <b>among</b> 5:20 6:20  34:5 35:8 68:17  70:15  <b>amount</b> 19:24  29:18 31:24 67:7  70:22 78:18 82:1  <b>analysis</b> 16:2  63:3,11,20  <b>Ann</b> 72:12  <b>ANS</b> 6:11 26:21  65:20  <b>ANSs</b> 5:13  <b>ANS-treated</b> 19:2  <b>answer</b> 36:25</p>	<p>55:17 57:2 73:2  83:24 87:7  <b>answered</b> 51:23  <b>answering</b> 55:20  <b>answers</b> 56:6  <b>anybody</b> 8:5 45:1  56:24  <b>anyone</b> 47:3 55:9  <b>anything</b> 26:24  30:5 48:21 54:15  55:14 69:3,22  73:4 84:6 85:16  87:8  <b>anywhere</b>  13:22,24 14:8  <b>A-Plan</b> 19:21  <b>apologize</b> 36:15  84:11  <b>Applause</b> 36:8  <b>application</b> 21:8  <b>applied</b> 53:16  <b>appreciate</b> 39:22  53:9 63:7 72:23  87:5  <b>approach</b> 36:17  48:21  <b>approaches</b> 28:5  <b>appropriate</b>  22:3,21 27:16  43:19 64:1  <b>appropriated</b>  79:13,17  <b>appropriately</b>  11:17  <b>appropriation</b>  73:6 82:13  <b>appropriations</b>  49:21 77:6 80:7  82:15  <b>approximately</b>  31:2,5  <b>April</b> 64:14</p>
--	--	--	---

<p><b>aquatic</b> 2:16 5:12 6:18 9:10 10:5,25 11:6,11 12:16 14:20 16:5,12 19:3,7,12,25 21:3,6,8,9,19 22:7,18 23:12,17,21 24:10 26:24 34:19,21 35:4,15 36:7 38:10,12,16 39:3,9 43:14 44:3 46:24 51:14,16 78:16 79:23</p> <p><b>Arbor</b> 72:12</p> <p><b>area</b> 10:11 12:10,11,15 14:4,8,19 17:13 23:8 25:2,8,12 26:9,12 27:18 28:14,19 32:15 48:20 50:5 62:17 64:9 67:4 74:5,21 83:25 84:4</p> <p><b>areas</b> 6:12 25:23 41:11 48:21 49:7 75:2 77:11 80:1</p> <p><b>aren't</b> 27:19</p> <p><b>Army</b> 1:17,19 2:7,18 3:7 4:23 6:14 7:21 9:6 39:13 41:17 53:20 55:14 70:18</p> <p><b>arrangements</b> 55:6</p> <p><b>arrival</b> 42:11</p> <p><b>arrived</b> 2:9 48:23</p> <p><b>article</b> 56:21</p> <p><b>Asian</b> 5:13 13:10 20:18 21:3 41:1,5 42:10 43:2 48:4 49:4</p>	<p>51:6,24 52:19 55:15 56:18,19 58:19,23,24 59:5,12,15,19,23 60:4,13 61:7 64:24 66:16 68:16,21,23 69:11,14 70:6 71:2,3,4 76:18 81:5 84:5,14,20</p> <p><b>asiancarp.us</b> 56:17 69:11</p> <p><b>assessment</b> 16:18 75:15</p> <p><b>assimilating</b> 79:6</p> <p><b>Assistant</b> 4:23 70:18</p> <p><b>assume</b> 26:25</p> <p><b>assumes</b> 82:5</p> <p><b>assuming</b> 57:23</p> <p><b>assured</b> 8:9</p> <p><b>attack</b> 52:18</p> <p><b>attendance</b> 72:21</p> <p><b>attendances</b> 71:24</p> <p><b>audiences</b> 71:25</p> <p><b>authorities</b> 6:23 22:3 46:8 79:25 80:1</p> <p><b>authority</b> 9:23 22:22 49:17,21,23 58:8 66:14 77:5 85:5,7</p> <p><b>authorization</b> 73:5 82:12,15</p> <p><b>authorized</b> 51:12 80:6</p> <p><b>available</b> 2:24 4:3,12 10:5 11:10 37:8 69:1 85:14 87:15,16</p> <p><b>avenue</b> 56:8</p> <p><b>average</b> 23:3</p>	<p><b>awarding</b> 53:2</p> <p><b>awareness</b> 22:17</p> <p><b>away</b> 31:23</p> <hr/> <p style="text-align: center;">B</p> <hr/> <p><b>backflow</b> 14:9 64:15</p> <p><b>background</b> 9:8 17:11</p> <p><b>bad</b> 16:22 21:14 45:25 85:6</p> <p><b>bait</b> 21:14</p> <p><b>ballast</b> 54:4,14,20</p> <p><b>Bare</b> 87:11</p> <p><b>barge</b> 19:15 24:7</p> <p><b>barrier</b> 13:9 17:23,25 18:3,7,22 20:14,15 32:21 33:2,9 42:23 63:1 67:14 70:1,2,9 74:16 77:1 82:16</p> <p><b>barriers</b> 17:4 24:1 27:5,8,20 28:4,6,8,10 29:8,13,15 31:17 32:13 33:4 46:1 69:24 74:13 83:12</p> <p><b>bars</b> 27:6</p> <p><b>based</b> 23:3 63:20 67:22,25 73:17 78:20</p> <p><b>baseline</b> 20:2,11,13 60:13 75:15,21 76:8 82:4</p> <p><b>basic</b> 19:11</p> <p><b>basically</b> 2:20 17:25 32:14,21 38:25 45:15 53:25 67:3 74:3</p> <p><b>basin</b> 10:9,17,23</p>	<p>12:18,22 13:17 14:21 17:14 31:3 35:21 39:9,17 40:14 49:25 50:2 77:20 78:5,23,24 84:4</p> <p><b>basins</b> 10:7 11:11 16:15,20 26:6 34:18 38:16 39:2 51:11 61:15,20</p> <p><b>basis</b> 24:13</p> <p><b>batch</b> 43:12</p> <p><b>battery</b> 45:18</p> <p><b>Bauer</b> 84:10</p> <p><b>Bay</b> 78:6</p> <p><b>beat</b> 59:25</p> <p><b>beauty</b> 86:3</p> <p><b>becoming</b> 16:20</p> <p><b>begin</b> 9:23 10:1 16:2 32:4 41:13</p> <p><b>beginning</b> 14:18 21:25 50:9</p> <p><b>begun</b> 47:22</p> <p><b>behalf</b> 80:13 81:4 82:9</p> <p><b>behind</b> 56:15</p> <p><b>believe</b> 51:20 52:4</p> <p><b>benchmark</b> 62:13</p> <p><b>beneficial</b> 59:8</p> <p><b>benefit</b> 76:1,4</p> <p><b>best</b> 15:8,15 16:4 22:11 30:10 33:16 35:15 73:12 82:8 86:14,17</p> <p><b>better</b> 30:9 45:19</p> <p><b>bi-directional</b> 23:11</p> <p><b>bighead</b> 61:1</p> <p><b>billion</b> 25:17 27:25 28:25 32:10 38:15 41:21</p>
--	---	--	---

82:25	<b>briefings</b> 57:16	<b>cargo</b> 13:19 28:13	65:10 66:7 76:14
<b>billions</b> 38:3	<b>bring</b> 22:16 41:1	<b>carp</b> 5:14 13:10	77:7 80:13 82:8
<b>biobullets</b> 68:22	<b>brown</b> 10:8	20:18 21:4	<b>certainty</b> 84:22
<b>biologist</b> 52:4	<b>bucket</b> 21:14	41:1,6 42:10	<b>CERTIFICATE</b>
57:11 78:20	<b>Buffalo</b> 40:2,11	43:2 44:19 47:7	88:1
<b>biologists</b> 9:12	<b>buffer</b> 26:8,9	48:5 49:5	<b>certify</b> 88:2,5
<b>biology</b> 9:9	34:25 66:9	51:6,18,22,24	<b>chain</b> 53:3
<b>birds</b> 51:8	<b>building</b> 43:23	52:1,16,19 55:15	<b>chamber</b> 19:3,4
<b>bit</b> 10:13 13:12	66:24	56:18,19	23:24
17:19 18:4 37:24	<b>built</b> 18:18 42:23	58:19,23,24	<b>chambers</b> 60:21
40:8 70:9 74:8	60:24 83:1	59:5,13,16,19,23	<b>chance</b> 47:3 51:8
82:23	<b>bullets</b> 6:25	60:4,13	60:8 63:8 84:8
<b>biweekly</b> 56:13	<b>Burch</b> 57:4,5	61:1,7,9,15,18	<b>change</b> 63:22 78:8
<b>blast</b> 78:2	<b>B-U-R-C-H</b> 57:5	64:24 65:12	80:11 84:3
<b>blocking</b> 76:12	<b>burgers</b> 60:5	66:17	<b>changed</b> 53:11
<b>blooms</b> 77:10	<b>buy</b> 22:23 34:24	68:16,19,22,23	<b>changes</b> 14:14
<b>blue</b> 2:14	46:9 52:11	69:12,14 70:6	<b>channel</b>
<b>board</b> 86:21 87:2	<b>buy-downs</b> 76:2	71:3,4 76:18,23	18:6,10,11,15,17
<b>boat</b> 19:15 21:13	<b>bypass</b> 24:23	77:9 81:5 83:21	,18 19:8 24:10
24:7 27:11 52:5	<b>by-product</b> 83:15	84:5,8,9,14,20	27:20 29:8,24
57:11		85:2	32:20,25 33:1
<b>Bob</b> 56:22 58:15	<hr/> <b>C</b> <hr/>	<b>cartoon</b> 17:23	<b>channels</b> 23:18
69:13 76:16	<b>Cal-Sag</b> 29:24	<b>case</b> 42:8 61:24	27:9
<b>bodies</b> 81:8,10	32:20,25	62:2 71:1 82:8	<b>channel</b>
<b>body</b> 69:5	<b>Canada</b>	<b>cases</b> 48:9	18:6,10,11,15,17
<b>bones</b> 59:1	46:11,18,21 49:9	<b>Casey</b> 56:22	,18 19:8 24:10
<b>bony</b> 58:23,24	<b>Canadian</b> 46:22	<b>cause</b> 10:24 11:16	27:20 29:8,24
<b>book</b> 33:24	<b>Canadians</b> 45:2,11	24:17,25	32:20,25 33:1
<b>bookend</b> 25:22	46:4 58:2	25:11,12	<b>channels</b> 23:18
<b>bookended</b> 23:25	<b>canal</b> 13:4 32:20	<b>caused</b> 34:10	27:9
<b>border</b> 49:7	42:23 48:22 53:4	54:22	<b>characterization</b>
<b>bottom</b> 18:10,11	60:24 67:10	<b>causes</b> 52:1	60:16
19:14 69:15	<b>canals</b> 50:14	<b>causing</b> 29:4 83:22	<b>charge</b> 51:13
<b>boundary</b> 54:21	<b>canoe</b> 27:11	<b>cautionary</b> 59:11	61:17 66:13
<b>bounty</b> 59:18	<b>canvas</b> 35:20	<b>CAWS</b> 12:10,16	68:25 70:11
<b>breadth</b> 10:13	<b>Capitol</b> 7:3	13:13 25:24	86:13
<b>breeding</b> 61:11	<b>capture</b> 25:5	<b>center</b> 43:16 83:6	<b>charged</b> 77:17
<b>brief</b> 3:11 8:17	<b>captures</b> 32:3	<b>central</b> 78:5	<b>charts</b> 63:14
<b>briefed</b> 7:3	<b>care</b> 71:8	<b>CEQ</b> 55:1 70:17	<b>check</b> 87:13
	<b>careful</b> 59:22	<b>certain</b> 35:1 44:2	<b>checkpoint</b> 26:3,4
		76:11	<b>checkpoints</b> 26:13
		<b>certainly</b> 4:21	<b>chef</b> 60:3
		5:4,7 11:19	<b>chemical</b> 43:9
		35:25 48:24	67:12
			<b>Cheney</b> 54:3,20
			<b>Chicago</b> 1:17,19
			2:7 3:7 6:11 7:7
			10:11 11:7,15
			12:10,11,12,15

<p>13:3,14,23 14:4,8,19 16:11 17:13 18:9 23:8 25:8 29:23 30:8,14 32:15,19 42:23 47:25 48:20 50:5,16,23 53:4,5 57:17 60:2,3 62:17 64:9,11,15 67:10 72:12 73:24 74:5,9,10,12,21 75:2 76:3 80:25 82:24 83:25 86:10,12 87:1</p> <p><b>child</b> 38:24</p> <p><b>choose</b> 4:15 15:12 35:24 37:3</p> <p><b>chose</b> 25:6 67:23</p> <p><b>chosen</b> 31:13</p> <p><b>Chris</b> 64:23 79:8</p> <p><b>Chuck</b> 57:12</p> <p><b>cities</b> 35:20</p> <p><b>citizens</b> 25:1 71:20</p> <p><b>city</b> 14:12 30:19,20 60:2 74:1,4</p> <p><b>Clancy</b> 7:17</p> <p><b>clean</b> 21:12 30:10 43:12 67:18 68:2</p> <p><b>cleaned</b> 30:8,9</p> <p><b>cleaning</b> 30:23</p> <p><b>clear</b> 19:3</p> <p><b>Cleveland</b> 72:12 81:22</p> <p><b>climate</b> 63:22</p> <p><b>close</b> 39:18 46:5,15 56:24</p> <p><b>closely</b> 64:20 67:16 70:13,14</p> <p><b>closes</b> 87:12</p> <p><b>closing</b> 84:9</p> <p><b>coast</b> 54:13,16</p>	<p><b>code</b> 37:13,19 40:1</p> <p><b>collaboration</b> 35:11</p> <p><b>collaborative</b> 73:18 81:1,8,9,12</p> <p><b>collecting</b> 3:23</p> <p><b>Colonel</b> 1:18 3:6 4:19,20 11:20 21:24 54:24 56:7 59:24 64:5 69:21 72:1 76:17 82:10 85:21</p> <p><b>color</b> 10:8</p> <p><b>combination</b> 19:6 22:8</p> <p><b>combinations</b> 32:13</p> <p><b>combined</b> 31:6 32:3</p> <p><b>coming</b> 11:23 26:5 38:25 39:22 40:8 43:5 50:25 79:12 85:23,25</p> <p><b>commander</b> 1:18 3:6 86:10,11</p> <p><b>commenced</b> 2:1</p> <p><b>commensurate</b> 15:5</p> <p><b>comment</b> 4:6,8,13,15 35:23 36:1 37:3 55:10,15,18,24 72:24 75:11 87:11,13,14</p> <p><b>comments</b> 3:13,21,23,25 4:2 35:14,24 36:11,20 37:14,25 40:12 46:4 61:22 64:22 65:14 73:20 79:4,6,10 85:11 88:5</p>	<p><b>commerce</b> 27:12 76:7</p> <p><b>commercial</b> 13:19 59:6 74:21 84:15</p> <p><b>commercially</b> 58:18,20 75:8</p> <p><b>Commission</b> 40:20 45:14,20 46:12,13 57:11,12,15 84:24</p> <p><b>Commissioner</b> 57:15</p> <p><b>committee</b> 46:6 68:17 71:3 81:5</p> <p><b>common</b> 9:21 25:13</p> <p><b>commonly</b> 23:20 43:10</p> <p><b>communicate</b> 21:25</p> <p><b>communities</b> 41:24</p> <p><b>compare</b> 15:8</p> <p><b>compared</b> 27:25</p> <p><b>comparison</b> 6:13</p> <p><b>compensate</b> 15:2</p> <p><b>compile</b> 56:1</p> <p><b>compiled</b> 4:3</p> <p><b>complete</b> 12:4 25:15 43:25 81:25</p> <p><b>completed</b> 72:25</p> <p><b>completion</b> 28:24 32:8 33:7,11 39:12</p> <p><b>complex</b> 5:11 50:18 71:13 80:17</p> <p><b>comprehensive</b> 46:19</p> <p><b>compromising</b></p>	<p>68:1</p> <p><b>concept</b> 43:7,17 44:10 60:1 66:10</p> <p><b>concepts</b> 18:2 67:21 77:7</p> <p><b>conceptual</b> 14:24 15:7 43:20 65:23</p> <p><b>concern</b> 16:16 18:23 39:11 42:9,17,19 65:11,17 78:14</p> <p><b>concerned</b> 42:25 68:14 71:21 86:5</p> <p><b>concerning</b> 41:1</p> <p><b>concerns</b> 46:1 55:22,23 66:16</p> <p><b>conclude</b> 34:7 47:1 85:13</p> <p><b>concluded</b> 87:18</p> <p><b>concluding</b> 85:19</p> <p><b>conclusion</b> 82:7</p> <p><b>concrete</b> 53:3</p> <p><b>conductive</b> 60:25</p> <p><b>conduct</b> 4:24 53:6</p> <p><b>conducted</b> 7:6</p> <p><b>confidence</b> 70:10</p> <p><b>confluence</b> 12:25</p> <p><b>Congress</b> 7:1 49:21,22 50:21 73:7 77:5 80:2,11,14 82:9</p> <p><b>congressional</b> 72:4 82:19</p> <p><b>conjunction</b> 67:13</p> <p><b>connection</b> 10:25 11:2,3 12:17 14:20</p> <p><b>connections</b> 16:11,12 17:9</p> <p><b>consensus</b> 82:18</p> <p><b>consequences</b></p>
--	---	--	--

<p>16:19 84:19 <b>Conservancy</b> 37:18 <b>consider</b> 40:22 <b>consideration</b> 62:1 67:9 73:20 <b>considerations</b> 34:6 <b>considered</b> 62:5 75:5 <b>constantly</b> 19:1 <b>construct</b> 18:5,14 24:21 27:16,22 29:20 53:3 73:4,7 77:4 <b>constructed</b> 25:3 28:23 <b>construction</b> 15:13 20:14,24 28:20 49:20 65:19,21,24 66:12 80:10 82:5 <b>consultations</b> 58:12 <b>contacts</b> 57:19 <b>contain</b> 24:21 <b>contaminants</b> 31:8 <b>Continental</b> 58:9 <b>continue</b> 26:14,15 72:8 82:11,21 <b>continued</b> 35:11 <b>continuous</b> 11:2 <b>contract</b> 53:2 <b>contribute</b> 79:15 <b>control</b> 2:17 13:10 16:6 17:5 18:16,17 20:1,17,20 21:9 22:20 23:4,8,10,11,13 24:2,19,24 25:9,21,22 26:5 34:21 35:5,15</p>	<p>36:7 38:6 40:23 44:6 46:23 50:20 64:3,4 67:24 79:24 <b>controlling</b> 26:23 68:13 <b>controls</b> 17:3,10 19:17 33:20 <b>conversation</b> 16:2 82:2,12 <b>converse</b> 33:8 <b>convey</b> 19:24 24:22 <b>conveyance</b> 13:21 14:1 26:16 27:23 <b>cordless</b> 36:17 <b>corner</b> 19:1 <b>Corps</b> 1:17,19 2:7,18 3:7,23 5:8 6:14,21 7:22 9:6,7 10:14 18:8 20:12 39:13 41:17 47:14 49:18 53:20 55:14 57:16 73:3 77:3 79:24 80:8 86:15 <b>correct</b> 57:25 88:6 <b>cost</b> 15:4,7,20 22:25 23:4 25:16 27:24 28:25 29:5,9 32:9 33:8,12,21 34:12 38:2,4 41:23 80:9 <b>costs</b> 15:6,10 38:7 81:16 <b>Council</b> 53:19 56:17 <b>country</b> 6:5 <b>COUNTY</b> 1:11 <b>couple</b> 5:3 12:3 26:10 27:3 28:10,11 29:1</p>	<p>34:6 35:19 48:14 50:12,17 53:10,11 55:17 57:6 58:11,12 64:5 77:23 79:22 <b>court</b> 37:6 53:24 88:12 <b>Crabtree</b> 37:16,17,18 <b>crack</b> 29:3 <b>cranes</b> 75:1 <b>cranked</b> 18:4 <b>create</b> 10:25 23:8,17 26:8 59:13 60:6 62:24 <b>created</b> 46:6 <b>creates</b> 23:10 <b>creating</b> 33:1 62:10 <b>criteria</b> 5:19 15:18 33:18,22 34:1,3 <b>culture</b> 58:22 75:7,8 <b>current</b> 18:7 23:3 30:13 52:9 82:16 <b>currently</b> 2:17 13:8 19:25 20:11 21:7 23:2 27:2 30:4,21 75:18 76:8 <b>cut</b> 74:16,17</p> <hr/> <p style="text-align: center;">D</p> <hr/> <p><b>D.C</b> 52:15 <b>daily</b> 24:12 <b>Dalzell</b> 76:16 <b>D-A-L-Z-E-L-L</b> 76:17 <b>dam</b> 66:24 <b>damned</b> 45:9 <b>Darran</b> 37:16,17 41:13</p>	<p><b>D-A-R-R-A-N</b> 37:17 <b>data</b> 7:18 83:3 <b>date</b> 57:18 65:11 <b>Dave</b> 1:16 3:8 8:15 9:2,5 54:25 64:12 70:17 82:22 86:23 <b>David</b> 64:16 84:10 <b>day</b> 31:7 <b>days</b> 5:4 44:22 54:25 <b>dead</b> 67:11,20 69:16 78:11 <b>deadline</b> 79:9,10 <b>deal</b> 45:9 <b>dealing</b> 74:6,12 <b>death</b> 52:13 <b>decide</b> 80:20 <b>decided</b> 79:18 <b>decision</b> 4:4 5:24 6:9 14:23 15:16 33:17 79:11,16 80:22 <b>decisions</b> 53:25 <b>dedicated</b> 6:22 16:17 43:16 <b>define</b> 67:24 <b>definitely</b> 43:24 46:21 61:2 <b>delay</b> 22:17 <b>delivered</b> 7:1 <b>delve</b> 47:16 <b>delving</b> 15:10 <b>demonstrate</b> 48:4 <b>demonstration</b> 70:2 <b>Department</b> 56:8 57:7 <b>dependence</b> 75:3</p>
--	--	--	--

<p><b>depth</b> 18:16 54:16  <b>described</b> 33:18  <b>describing</b> 53:12  <b>design</b> 14:24,25  15:5,10 18:14  62:25 64:1  65:23,25 69:25  82:7  <b>desk</b> 4:12  <b>detail</b> 33:22 55:7  66:16 73:16  78:16 82:7  <b>detailed</b> 15:9  84:19  <b>details</b> 80:19  <b>detection</b> 47:18  <b>detections</b> 70:8  <b>determine</b> 63:6,17  <b>Detroit</b> 30:20  <b>develop</b> 59:12  <b>developed</b> 85:8  <b>developing</b> 3:18  7:21  <b>development</b> 9:25  43:16 68:25 69:4  83:6  <b>devices</b> 70:7  <b>Dick</b> 44:12,16 54:3  57:21  <b>dies</b> 69:14  <b>different</b> 2:10  7:7,21,24 8:5  9:16 12:4 14:15  16:1,14 27:3  28:5,22 29:2  32:18 34:5 35:17  47:22,23 56:11  57:6 58:12 59:9  63:11 68:19  73:13 75:17  77:18,24 81:6,11  <b>difficult</b> 29:3  37:10 38:8 45:9</p>	<p>58:25  <b>digest</b> 8:22,23  71:14  <b>directed</b> 4:22  <b>directing</b> 56:24  <b>direction</b> 27:1  66:15  <b>directions</b> 14:10  39:10 66:11  <b>directly</b> 38:7 70:17  <b>Director</b> 57:7  <b>directors</b> 87:3  <b>discharge</b>  30:4,6,13 31:15  <b>discharges</b> 30:19  <b>discuss</b> 3:15 11:24  <b>discussed</b> 55:8  <b>discussing</b> 87:2  <b>discussion</b> 33:25  34:2 36:19 45:1  69:22 72:7,9  73:11,19 81:18  86:20  <b>disinfection</b> 30:17  <b>dissolved</b> 68:21  <b>distinguish</b> 5:20  <b>District</b> 1:17,19  2:7 3:7 86:11  87:2  <b>districts</b> 7:22 8:9  <b>ditch</b> 11:4  <b>ditches</b> 50:13  <b>divide</b> 5:15  10:9,14,17,19,23  21:8 29:11 40:21  50:1,3  <b>DNA</b> 44:24  47:7,11,17,23  48:5,7,10  <b>DNR</b> 22:22  56:8,25 60:9</p>	<p>61:2,3  <b>dollars</b> 38:3,6  <b>done</b> 10:15 15:1  20:3,4,23 22:24  25:3 28:4 32:1  34:8 35:2 42:20  43:25 47:21 48:3  53:8 57:18 58:18  60:9 76:21 79:15  <b>downpour</b> 64:14  <b>downstream</b> 14:6  30:4 31:16,22,25  <b>Drag</b> 37:16  39:24,25  <b>drainage</b> 11:5  50:14  <b>drainages</b> 58:17  <b>dramatic</b> 60:13  78:8  <b>drawing</b> 17:23  <b>draws</b> 41:2  <b>drive</b> 40:10  <b>driven</b> 38:16  <b>drop</b> 31:2  <b>Drummond</b> 1:18  3:6 4:19,20  11:20 21:24  54:11,24 56:7  59:24 64:5 69:21  72:1 82:10 85:21  <b>dry</b> 24:11  <b>due</b> 76:19  <b>dump</b> 21:14  <b>dumped</b> 54:21  <b>dumping</b> 54:4  <b>duration</b> 15:19  33:21 63:12  <b>during</b> 14:7 48:1  65:18,20  <hr/> E  <hr/> <b>earlier</b> 2:22 23:14</p>	<p>83:7 86:4 87:6  <b>earliest</b> 44:22  <b>early</b> 24:4 34:24  61:19 66:18  <b>east</b> 1:12 74:19  <b>easy</b> 16:11 24:13  73:2  <b>eat</b> 60:1  <b>eaten</b> 58:24  <b>echo</b> 54:24  <b>economic</b> 33:20  38:15,18  <b>economically</b>  40:21  <b>economies</b> 15:21  17:12 59:22  <b>ecosystem</b> 78:9  <b>Ed</b> 51:25 63:5  71:23  <b>educate</b> 21:15  84:14  <b>education</b> 21:11  22:9 42:6  <b>eels</b> 48:23,25  <b>effect</b> 60:13  <b>effective</b> 22:11  34:16 40:15  42:14 44:10 70:4  <b>effectiveness</b> 16:25  33:19 69:24  <b>efficiency</b> 44:2  <b>efficient</b> 76:10,14  <b>efficiently</b> 27:1  28:16  <b>effort</b> 53:16 81:12  <b>efforts</b> 2:17 12:9  42:1 54:1 81:3  <b>eggs</b> 24:5  <b>either</b> 24:1,23 27:1  34:10 36:12  69:17</p>
---	--	---	--

<p><b>elected</b> 56:5</p> <p><b>electric</b> 13:9                  18:2,7 20:14,15                  23:25 24:1 42:22                  46:1 53:6 77:1                  82:16</p> <p><b>electrical</b> 67:13</p> <p><b>electrodes</b> 18:21</p> <p><b>electronic</b> 70:4</p> <p><b>electroshock</b> 52:9</p> <p><b>elements</b> 17:4</p> <p><b>elevation</b> 84:3</p> <p><b>eleven</b> 35:17,19</p> <p><b>eliminate</b> 59:15</p> <p><b>eliminating</b> 32:4                  40:22</p> <p><b>Elizabeth</b> 47:5</p> <p><b>else</b> 22:16 26:7                  35:3 42:10 54:17                  55:9 86:2 87:8</p> <p><b>e-mail</b> 55:18 78:2</p> <p><b>emphasize</b> 38:21</p> <p><b>enacted</b> 39:19</p> <p><b>encourage</b> 39:13                  79:4</p> <p><b>energy</b> 35:10</p> <p><b>enforce</b> 21:20</p> <p><b>enforcing</b> 67:18</p> <p><b>engaged</b> 58:13,14</p> <p><b>engineer</b> 43:9 52:3</p> <p><b>engineered</b> 18:5</p> <p><b>engineering</b> 9:8                  50:19 81:23</p> <p><b>engineers</b> 1:17,19                  2:8,18 3:7,23                  6:14 7:22 9:6,11                  10:15 18:8 47:14                  49:18 53:20                  55:14 63:15 73:3                  77:4 79:24 80:8                  86:15</p>	<p><b>enhancement</b>                  75:24</p> <p><b>enlightening</b> 73:25</p> <p><b>enter</b> 36:1 54:23</p> <p><b>entered</b> 47:8</p> <p><b>entertain</b> 65:14</p> <p><b>entire</b> 31:3 55:3                  72:3</p> <p><b>entry</b> 43:3</p> <p><b>environment</b>                  15:22 47:24</p> <p><b>environmental</b>                  32:5 33:20                  44:5,8 52:23                  53:19 57:8 67:4                  76:3</p> <p><b>environments</b>                  17:12</p> <p><b>episodes</b> 64:24</p> <p><b>episodic</b> 10:21                  50:10</p> <p><b>Eric</b> 39:24 42:2,3                  67:8</p> <p><b>Erie</b> 1:11,12 4:22                  37:20 40:8 41:20                  48:23 56:24 65:2                  72:14 74:18                  77:12 78:5 85:24</p> <p><b>error</b> 40:6</p> <p><b>especially</b> 40:22                  44:23 45:24                  62:24</p> <p><b>essentially</b> 23:17                  64:3</p> <p><b>established</b> 16:20                  40:24 61:20                  63:19 77:15</p> <p><b>establishing</b> 52:19                  67:11</p> <p><b>estimate</b> 23:2                  24:13 32:8</p> <p><b>estimated</b> 22:25                  28:23,25 32:9</p>	<p>33:7 38:5,15</p> <p><b>estimates</b> 15:4</p> <p><b>estimation</b> 15:10</p> <p><b>evaluate</b> 12:13                  16:24 20:3,11</p> <p><b>evaluated</b> 16:13</p> <p><b>evaluation</b> 5:19                  15:18                  33:18,22,25 76:8</p> <p><b>evening</b> 2:8 35:4</p> <p><b>event</b> 25:6 26:19                  49:13 50:11                  62:18                  63:12,18,22</p> <p><b>events</b> 5:3 10:23                  14:8 24:17 25:7                  62:16,20 63:3                  64:2,13</p> <p><b>eventually</b> 12:24                  13:2 26:2 70:1</p> <p><b>everybody</b> 4:21                  42:10 63:8 70:25                  81:4,14 85:22                  86:4,5,14,18</p> <p><b>everyone</b> 2:3                  4:4,17 36:18,22                  85:17</p> <p><b>everything</b> 55:3</p> <p><b>evident</b> 86:3</p> <p><b>exactly</b> 12:7 47:13                  48:7 53:17 70:12                  83:3</p> <p><b>examines</b> 5:12</p> <p><b>example</b> 30:25                  44:1,6 51:1                  53:13 58:23</p> <p><b>examples</b> 20:25</p> <p><b>excited</b> 5:8</p> <p><b>exist</b> 10:19 11:6                  34:14</p> <p><b>existing</b> 11:14,17                  13:9 14:16 15:3                  20:15 21:21 28:9</p>	<p>29:10,11 30:18                  75:14</p> <p><b>exists</b> 21:7</p> <p><b>expect</b> 48:24 49:1</p> <p><b>expenditures</b> 23:3                  40:23</p> <p><b>experience</b> 45:23</p> <p><b>experienced</b> 84:7</p> <p><b>explaining</b> 34:8</p> <p><b>extensive</b> 60:9</p> <p><b>extinct</b> 59:15</p> <p><b>extremely</b> 84:2</p> <hr/> <p style="text-align: center;">F</p> <hr/> <p><b>facilities</b> 83:10,20</p> <p><b>fact</b> 34:9 47:7                  61:20 71:5</p> <p><b>factor</b> 34:12</p> <p><b>facts</b> 86:16,17</p> <p><b>fairly</b> 45:17</p> <p><b>falling</b> 64:10</p> <p><b>famous</b> 60:3</p> <p><b>Faneman</b> 44:12</p> <p><b>fantastic</b> 9:11                  72:21</p> <p><b>farm</b> 49:8,12</p> <p><b>farmers</b> 50:13</p> <p><b>farmer's</b> 11:4</p> <p><b>farthest</b> 3:5</p> <p><b>fast</b> 16:5</p> <p><b>faster</b> 44:23</p> <p><b>feasible</b> 40:22 69:6</p> <p><b>feature</b> 23:23</p> <p><b>February</b> 52:17                  71:6</p> <p><b>federal</b> 6:6,20 7:8                  19:22,23 20:4,16                  22:2 35:8 41:17                  46:7 52:16 58:4                  67:16,25 80:18</p>
--	--	---	---



<p>81:6  <b>federally</b> 80:12  <b>federally-funded</b>                  46:20 58:8  <b>feedback</b> 36:2  <b>feel</b> 37:2 71:9 87:7  <b>fence</b> 53:3,13  <b>fertilizer</b> 59:9  <b>figure</b> 20:10 83:7  <b>final</b> 69:25  <b>finally</b> 2:19 41:19  <b>first</b> 2:11,25 3:5,17                  16:10 23:6 27:25                  28:2 37:9,15                  40:13 42:19,22                  48:15,25 57:22                  75:15 78:3  <b>fish</b> 5:13 24:2,5                  45:23                  47:15,19,20                  51:21 52:8 57:11                  58:16,21,22 59:8                  65:6,10 69:15,16                  70:5,13 78:10  <b>fisheries</b>                  38:14,16,17                  45:20 57:11,24                  61:4  <b>fisherman</b> 52:8  <b>fishery</b> 45:21  <b>fishing</b> 21:2 46:12                  59:6 84:15,24  <b>fits</b> 84:15  <b>five</b> 5:3 12:19,24                  13:1 44:19 45:3                  62:15 66:25  <b>five-digit</b> 37:13  <b>flat</b> 70:19 84:1  <b>flattest</b> 70:15  <b>Fleer</b> 1:22 2:2,6                  36:9 39:23 42:2                  44:11 47:1 48:12</p>	<p>55:9 61:5,21                  64:21 65:13                  69:19 79:3 85:10                  87:10  <b>float</b> 19:13                  69:14,15,18  <b>floating</b> 19:4                  24:4,5  <b>flood</b> 10:25 14:3                  26:17 27:14                  29:2,9,16,20                  40:17 44:18                  62:25 67:2 76:2  <b>flooding</b> 14:11                  24:25 25:12                  28:18 53:14                  61:25 62:2,4                  74:9  <b>floor</b> 3:13 8:14                  36:10 37:1 81:1  <b>Florida</b> 7:23  <b>flow</b> 14:10 23:18                  24:9,12,13,17                  25:5 26:2 43:8                  65:20  <b>flowing</b> 50:12  <b>flows</b> 12:25 13:13                  14:5 23:15 31:15                  43:19 74:1  <b>fluctuate</b> 24:18  <b>flush</b> 19:2 73:16  <b>flushing</b> 19:1                  23:24 43:8  <b>fly</b> 51:8  <b>focus</b> 12:9 41:2                  49:4 50:1 51:13  <b>focused</b> 45:23                  49:24 50:17 71:4  <b>focusing</b> 61:7  <b>folks</b> 7:19 8:1,20                  36:12 70:3 71:12                  72:15,21  <b>foregoing</b> 88:6</p>	<p><b>form</b> 4:11 10:22                  12:17 50:11                  87:14  <b>formally</b> 4:7  <b>forms</b> 12:24  <b>formulate</b> 16:23  <b>forth</b> 42:7 84:16  <b>forward</b> 6:23 16:5                  35:15 36:7 43:22                  82:21  <b>frame</b> 12:5 39:16                  66:20 79:16,19  <b>frames</b> 9:18  <b>Frederic</b> 1:18 3:6  <b>free</b> 26:21 37:2                  69:21 87:7  <b>freely</b> 24:24  <b>frequently</b> 53:6  <b>frequently-asked</b>                  2:15  <b>freshwaters</b> 54:23  <b>FRIDAY</b> 1:9  <b>front</b> 1:12                  60:18,21 76:18  <b>fronts</b> 87:4  <b>full</b> 2:23 37:7,13  <b>fully</b> 58:7  <b>funded</b> 80:8,12  <b>funding</b> 10:1                  22:23  <b>future</b> 6:16 35:6                  40:23 46:16,23</p> <hr style="width: 20%; margin: 10px auto;"/> <p style="text-align: center;"><b>G</b></p> <hr style="width: 20%; margin: 10px auto;"/> <p><b>gallons</b> 31:6 82:25  <b>gate</b> 84:9  <b>gather</b> 86:17  <b>general</b> 31:11 32:6  <b>generally-</b>  <b>accepted</b> 84:12</p>	<p><b>genetic</b> 68:8,12  <b>gentleman</b> 42:16                  57:2 85:23  <b>Geological</b> 68:18  <b>getting</b> 65:24  <b>given</b> 22:21 85:5,6  <b>gives</b> 70:9  <b>giving</b> 5:4  <b>glanced</b> 68:10  <b>GLMRIS</b> 1:5                  2:5,16,20,24                  3:18,22 4:10                  5:10,17,22 6:2,4                  8:15 9:23,24                  11:8,20 14:23                  15:16 16:8                  18:4,13,25 23:24                  38:20 43:7                  46:6,14 76:4                  83:4  <b>glmr.is.anl.gov</b>                  2:25  <b>goal</b> 11:8 12:3  <b>goals</b> 3:16  <b>goods</b> 75:3 76:10  <b>Goss</b> 55:2 60:11                  70:16 72:8 86:25  <b>gotten</b> 54:19  <b>government</b> 20:5                  22:2 41:17  <b>governmental</b>                  46:8  <b>governments</b>                  45:16  <b>Governor</b> 59:24  <b>Grand</b> 58:11  <b>Grant</b> 42:5 61:6                  65:15  <b>Granted</b> 63:21  <b>Grants</b> 42:5  <b>grass</b> 61:8,9,15,18</p>
---	--	---	--

<p><b>Grazio</b> 57:9,19</p> <p><b>great</b> 1:6 2:4 3:9 5:10,14,15 6:7 8:4,8,10 10:6,15 12:18,20 13:11,16 14:21 17:13 30:20,22,24 31:10 32:6 35:20 38:5,14,17,23,25 39:2 40:1,14,17,19 41:2 42:1,11 43:3 44:9,10 45:20 46:12 47:12 48:10 49:7,25 50:25 51:2 57:9,10,15 60:21 64:17,25 65:12 74:22 77:15,16 78:1,17,23 84:24 86:5</p> <p><b>greater</b> 62:17</p> <p><b>greatly</b> 24:18</p> <p><b>green</b> 2:11 31:13</p> <p><b>grind</b> 59:1</p> <p><b>ground</b> 30:1</p> <p><b>group</b> 37:11 46:7</p> <p><b>groups</b> 47:20</p> <p><b>growth</b> 38:16</p> <p><b>grumpy</b> 45:2</p> <p><b>Grzasko</b> 48:13</p> <p><b>G-R-Z-A-S-K-O</b> 48:14</p> <p><b>guard</b> 54:13,16</p> <p><b>guess</b> 57:1 59:11</p> <p><b>guiding</b> 85:18</p> <p><b>gut</b> 68:21</p> <p><b>guys</b> 45:25</p> <hr/> <p style="text-align: center;">H</p> <hr/> <p><b>half</b> 25:17 55:2</p>	<p>64:13 86:6</p> <p><b>hand</b> 4:19 10:8 23:10</p> <p><b>handful</b> 72:19</p> <p><b>hands</b> 36:23 69:19</p> <p><b>hang</b> 85:14</p> <p><b>happen</b> 83:6</p> <p><b>happens</b> 26:19 63:23</p> <p><b>happy</b> 57:4,20</p> <p><b>harm</b> 11:17 67:5 77:14</p> <p><b>harmful</b> 77:10</p> <p><b>hats</b> 57:6</p> <p><b>haven't</b> 32:14 62:1 68:7 74:23 87:12</p> <p><b>having</b> 16:3 24:19,20 25:20 40:3,4 73:18 81:17 82:2</p> <p><b>head</b> 59:19 61:8</p> <p><b>headquarters</b> 86:10,23</p> <p><b>headwaters</b> 10:24 50:12</p> <p><b>hear</b> 3:21,25 4:24 6:19 8:18 11:24 35:13,21</p> <p><b>heard</b> 5:6 8:23 38:1 56:2 60:10 71:17 74:23 79:5 81:20,21,22 86:20</p> <p><b>heavily</b> 45:12 56:9</p> <p><b>heck</b> 59:19</p> <p><b>held</b> 40:7</p> <p><b>help</b> 5:19 15:24 16:23 21:20 22:16 24:2 29:8 34:4 37:13 53:13 55:20 87:17</p> <p><b>helpful</b> 45:8,14</p>	<p><b>helping</b> 9:11</p> <p><b>helps</b> 24:3</p> <p><b>herbicides</b> 17:3 21:9 22:23</p> <p><b>HEREBY</b> 88:2</p> <p><b>hey</b> 29:10</p> <p><b>Hi</b> 2:2 39:25 47:5</p> <p><b>high</b> 16:21 46:13 77:24</p> <p><b>higher</b> 86:9,22</p> <p><b>highlighted</b> 13:7 26:9</p> <p><b>high-tech</b> 64:8</p> <p><b>historically</b> 44:21 51:1 65:1</p> <p><b>history</b> 63:21</p> <p><b>hit</b> 55:7 82:23</p> <p><b>hitchhike</b> 19:14</p> <p><b>hitch-hike</b> 19:13</p> <p><b>hold</b> 24:22 25:10</p> <p><b>honestly</b> 67:25</p> <p><b>honesty</b> 59:2</p> <p><b>hope</b> 34:8 51:23 56:5 59:20</p> <p><b>hopefully</b> 22:17</p> <p><b>hopes</b> 41:7</p> <p><b>hoping</b> 65:16</p> <p><b>host</b> 61:4</p> <p><b>hours</b> 60:11</p> <p><b>house</b> 52:15 53:18 56:16 72:3 81:5</p> <p><b>hundred</b> 7:24</p> <p><b>hundreds</b> 17:15 38:5 60:11</p> <p><b>hybrid</b> 32:12</p> <p><b>hydro</b> 83:10,11,15,20,2 5</p> <p><b>hydrologic</b> 12:14 28:3 29:11 63:15</p>	<p>74:16</p> <p><b>hydropower</b> 84:3</p> <hr/> <p style="text-align: center;">I</p> <hr/> <p><b>ice</b> 48:4</p> <p><b>idea</b> 25:19 35:4 43:11 44:10 76:25 79:23 85:6</p> <p><b>ideas</b> 18:25 22:12 59:17</p> <p><b>identification</b> 21:6,12</p> <p><b>identified</b> 3:1 10:18 16:10,15,21 17:2,3 47:22 48:10 61:14 77:19,21 78:13</p> <p><b>identifies</b> 2:12,15 6:15</p> <p><b>identify</b> 10:15 31:14 37:9 47:22 50:4,15 78:18</p> <p><b>identifying</b> 78:13</p> <p><b>illegal</b> 21:19 49:6 51:19,20,22</p> <p><b>Illinois</b> 27:19 59:4 60:9 61:2</p> <p><b>illustrates</b> 84:13</p> <p><b>I'm</b> 5:1 8:13,14 9:14 10:10 16:6 22:8 24:15 27:10 30:7 36:4 37:24 38:11 39:25 40:2 42:4,25 43:8 44:15,25 52:3 54:11 57:6,22 59:19 62:4 64:11 77:21 80:14 85:25 86:1,11,16</p> <p><b>imagine</b> 21:23 24:12,16 26:18 28:8</p> <p><b>immediately</b> 31:16</p>
--	---	---	---

<p><b>impact</b> 11:13,16 14:16 15:2,21 25:11,12 29:25 32:5 38:18 73:1 76:23 84:13</p> <p><b>impacted</b> 27:19 33:14</p> <p><b>impacts</b> 11:18 33:20 34:10 76:5</p> <p><b>implement</b> 15:19 27:24 33:10 34:25 49:19 66:23 68:15 73:4 77:4</p> <p><b>implementable</b> 69:6</p> <p><b>implementation</b> 29:4 33:21 35:6 46:16</p> <p><b>implemented</b> 11:13 14:14 20:22 22:20 23:5 39:16,21 43:1,13 53:12,15,22 66:5 75:19</p> <p><b>importance</b> 70:21</p> <p><b>important</b> 11:20 13:14 14:1,4 20:9 21:12,25 22:4 27:15 31:21,22 35:12 36:3 38:20 41:4,12 65:5 66:22 71:11 73:9 75:22 76:6 82:3 85:3,23</p> <p><b>importantly</b> 3:20 71:16</p> <p><b>imposed</b> 67:3,5</p> <p><b>impossible</b> 80:23</p> <p><b>impresses</b> 70:24</p> <p><b>impressive</b> 37:21</p> <p><b>improve</b> 40:17</p> <p><b>improvement</b></p>	<p>75:19</p> <p><b>improvements</b> 75:16</p> <p><b>incentive</b> 83:14</p> <p><b>include</b> 13:18 18:5 21:2,5 22:13 23:24 46:10,22</p> <p><b>included</b> 4:7 27:4,8 30:15 64:1 75:20</p> <p><b>includes</b> 15:19 21:11,17</p> <p><b>including</b> 17:13</p> <p><b>incorporation</b> 6:16</p> <p><b>increase</b> 28:17</p> <p><b>increased</b> 30:16 65:18</p> <p><b>Indiana</b> 27:18</p> <p><b>indicate</b> 85:12</p> <p><b>indicating</b> 23:16 25:25</p> <p><b>indirect</b> 38:7</p> <p><b>individual</b> 23:12 80:19 87:7</p> <p><b>individuals</b> 8:2,4 70:22</p> <p><b>information</b> 3:3,22 5:25 7:8,9 8:23 15:23 17:8,10,11 46:18 47:9 48:10 54:17 56:2,18 71:14 73:21 81:17 84:20,21</p> <p><b>infrastructure</b> 25:14 27:16 28:21 29:19 62:24</p> <p><b>inherently</b> 74:11</p> <p><b>initiated</b> 58:4</p> <p><b>input</b> 5:5,7 8:24 11:25 35:13,21</p>	<p>46:9 67:22,25 73:17 79:22</p> <p><b>instance</b> 48:22</p> <p><b>instances</b> 65:3</p> <p><b>Instead</b> 25:20 31:12</p> <p><b>institute</b> 26:4</p> <p><b>instituted</b> 52:25 53:1</p> <p><b>institutions</b> 47:16</p> <p><b>instruction</b> 80:4</p> <p><b>instructions</b> 4:14</p> <p><b>insulated</b> 18:18</p> <p><b>insure</b> 6:9 86:13</p> <p><b>intakes</b> 83:22</p> <p><b>intent</b> 53:11 68:2 71:13 85:4</p> <p><b>interact</b> 12:21</p> <p><b>interbasin</b> 1:6 2:5 3:10 5:11 71:2</p> <p><b>interest</b> 15:25</p> <p><b>interested</b> 5:7 37:24</p> <p><b>interesting</b> 64:6 86:19 87:16</p> <p><b>interface</b> 28:9 49:24</p> <p><b>interference</b> 53:24 54:19</p> <p><b>interim</b> 39:15,20 41:15 43:2 66:4 73:9 82:2</p> <p><b>intermittently</b> 67:13</p> <p><b>International</b> 45:14 46:11</p> <p><b>introduce</b> 3:4</p> <p><b>intuitive-type</b> 71:20</p> <p><b>invasive</b> 39:1 48:23 54:22</p>	<p><b>invest</b> 38:11,12</p> <p><b>investment</b> 35:8,9</p> <p><b>involve</b> 58:10 73:18</p> <p><b>involved</b> 7:22,25 8:10,16 45:12 46:5 56:10,12 61:3 70:23 76:20 79:19 86:7</p> <p><b>Isle</b> 78:6</p> <p><b>isn't</b> 41:2</p> <p><b>issue</b> 38:24 40:25 41:3 44:17 74:20</p> <p><b>issues</b> 41:10 44:8 73:24</p> <p><b>it's</b> 2:25 4:21 10:14 11:4 17:24 18:10,11 20:9 21:12,14,25 22:4 24:13 25:15 26:21,22 27:15,21 30:10 37:21 40:10 41:12,20,21 43:9 44:9 45:16 50:18 51:21 52:4 55:5 56:17 58:20 59:9 61:9 63:13,19,20 65:10 66:25 68:25 70:10,14 73:9 75:22 76:6 77:11,15 80:23 82:25 83:1,4,7 85:5,17 86:13</p> <p><b>I've</b> 78:7</p> <hr/> <p style="text-align: center;"><b>J</b></p> <hr/> <p><b>Jacksonville</b> 7:23</p> <p><b>jamming</b> 83:22 84:5</p> <p><b>January</b> 1:9 6:25 7:2 12:6 81:13</p> <p><b>Jenny</b> 88:12</p> <p><b>Jim</b> 57:9,19</p> <p><b>job</b> 34:8 57:18</p>
--	--	--	--

<p>70:11 <b>John</b> 55:2 60:11 70:16 72:7 86:25 <b>joining</b> 9:4 <b>Joint</b> 45:14 46:11 <b>Jon</b> 27:11 <b>July</b> 9:25 12:1,6 <b>jump</b> 52:2,12 <b>jumping</b> 86:2 <b>jurisdictions</b> 21:21</p> <hr/> <p style="text-align: center;">K</p> <hr/> <p><b>Karuba</b> 73:22 <b>Kelly</b> 57:5 61:6 65:15 <b>Kendall</b> 36:17 <b>kids</b> 8:8 <b>Kim</b> 77:8 78:2 <b>kinds</b> 43:24 46:21 <b>Kissell</b> 51:25 52:11 53:23 54:18 63:5 71:23 <b>K-I-S-S-E-L-L</b> 52:1 <b>Kissell</b> 56:21 <b>knee-jerk</b> 74:15 <b>knew</b> 16:12 <b>knowledge</b> 54:10 69:5 <b>known</b> 2:5 64:24 84:22 ██████████ 44:12,15 57:21 58:1 ██████████ 44:16</p> <hr/> <p style="text-align: center;">L</p> <hr/> <p><b>labor</b> 79:19 <b>laid</b> 16:25 <b>lake</b> 12:13,21 14:6</p>	<p>23:15 25:23 26:3 28:10 29:24 30:6,13,25 31:10 32:6 41:20,21 44:24 47:8 48:23 52:20 60:14,18 65:2 67:6 74:17,18 76:19 77:12 78:5,7 <b>lakefront</b> 28:7,9 <b>lakes</b> 1:6 2:4 3:9 5:10,14,16 6:8 8:4,8,10 10:6 12:18,20 13:11,16 14:21 17:14 30:20,22,24 31:11 32:6 35:21 38:5,14,17,23 39:1,2 40:1,14,17,19 41:2 42:1,11 43:3 44:19 45:3,20 46:12 47:12 48:11 49:7,25 50:25 51:2 57:9,10,15 60:21 64:17,25 65:12 74:22 77:15,16,20 78:1,23,24 84:24 85:3 86:5 <b>lamprey</b> 48:25 <b>land</b> 64:9 <b>large</b> 26:18 28:21 43:13,15 74:5 <b>largest</b> 41:20 <b>last</b> 3:19 5:3 32:11 54:25 55:2 64:12,13 71:19 74:15 78:5 79:3 87:10 <b>lastly</b> 37:12 <b>late</b> 42:24 60:25 <b>later</b> 12:8 <b>Lauren</b> 1:22 2:6</p>	<p>36:5 <b>Lawrence</b> 40:9 51:1 <b>laws</b> 21:17,20 22:1,3,5,9 <b>lead</b> 9:11 <b>leaders</b> 39:14 <b>leads</b> 32:25 <b>learned</b> 9:9 <b>least</b> 43:20 62:16 <b>leave</b> 35:3 <b>leaving</b> 32:22,24 <b>led</b> 52:23 <b>left-hand</b> 18:3 19:1 <b>legal</b> 49:6 <b>legality</b> 51:17 <b>legislation</b> 12:2,6 80:5 <b>lengthier</b> 2:21 <b>less</b> 33:12 53:5 <b>let's</b> 25:21,22 29:10 36:10 <b>letters</b> 58:6 <b>level</b> 14:24,25 15:5,7 30:23 41:3,10 43:20 63:10 65:22 74:8 <b>LIBRARY</b> 1:11 <b>life</b> 24:4 <b>life-long</b> 41:19 <b>light</b> 72:20 <b>likely</b> 76:12 77:21 <b>limited</b> 77:11 <b>line</b> 60:19,22 <b>lines</b> 31:13 51:21,22 54:21 67:14 <b>link</b> 53:3</p>	<p><b>linked</b> 55:3 <b>list</b> 15:24 47:2 <b>listen</b> 5:2 8:14,21 <b>listening</b> 73:19 <b>lists</b> 78:17 <b>literature</b> 42:13 <b>little</b> 10:12 13:12 17:19 18:4 70:7,9 74:7 82:23 84:22 <b>live</b> 40:9 47:19 51:21,22 <b>lived</b> 78:7 <b>livelihood</b> 38:18 71:21 <b>lives</b> 74:10 <b>living</b> 64:8 <b>load</b> 30:24 31:4,8 <b>local</b> 6:20 25:1 55:12,14 57:19 72:4 81:7 <b>located</b> 12:12 <b>locations</b> 35:18 <b>lock</b> 18:25 19:2 23:24 24:3 42:13 43:7,8,13,18 44:4,7 60:20 77:1 83:4 84:7 <b>locks</b> 44:5 53:5 76:19,22 83:9,18,23 84:6 <b>long</b> 15:20 29:4 39:7,13 41:14 44:1 55:23 81:23 83:1,3 <b>long-term</b> 66:6 86:20 <b>lose</b> 28:16 31:24 <b>lot</b> 5:4 7:4 8:23 9:9 10:15 28:18 29:14 33:25 39:6,8 41:22</p>
--	--	--	---

<p>42:5 44:23 47:21 48:19 50:18 51:2 52:12 53:11 59:3 68:24 69:11 71:19,25 72:3,7 78:25 79:21 81:6,17 84:19 85:4 86:1</p> <p><b>love</b> 8:4 40:8 42:19</p> <p><b>lower</b> 27:5 32:16,22 33:1</p> <hr/> <p style="text-align: center;">M</p> <hr/> <p><b>magnitude</b> 11:3 62:12</p> <p><b>Magnum</b> 45:10</p> <p><b>mail</b> 4:15</p> <p><b>main</b> 39:5 42:8</p> <p><b>maintains</b> 18:8</p> <p><b>major</b> 62:4 64:13</p> <p><b>majority</b> 10:20 24:9 50:10 80:9</p> <p><b>makers</b> 4:4 5:24 6:9 14:23</p> <p><b>managed</b> 34:23</p> <p><b>management</b> 14:3 21:1,2 22:11 26:17 27:15 29:2,9,17 38:10,13 40:24</p> <p><b>manager</b> 3:9 8:15 9:6 86:9</p> <p><b>manages</b> 54:13</p> <p><b>manner</b> 19:16 23:16</p> <p><b>map</b> 23:9</p> <p><b>March</b> 3:24 35:24 36:2 79:9 87:12</p> <p><b>mark</b> 44:22 73:22</p> <p><b>market</b> 59:3,10,12 60:6</p> <p><b>marketability</b></p>	<p>58:18</p> <p><b>Marty</b> 48:13</p> <p><b>marvel</b> 70:4</p> <p><b>material</b> 18:17 68:21 87:16</p> <p><b>materials</b> 2:10 18:19</p> <p><b>matter</b> 88:3</p> <p><b>may</b> 14:16 15:11 18:23 19:3 23:5 34:16 36:25 37:11 66:17 75:23 76:19,23 81:23,24</p> <p><b>maybe</b> 24:6 27:11 59:18 63:23 66:3 76:21 80:17</p> <p><b>mccormick</b> 47:5</p> <p><b>McCormick</b> 47:6</p> <p><b>mean</b> 19:14 47:17,18 70:22 81:25</p> <p><b>means</b> 10:21 31:1 47:13 50:10</p> <p><b>meantime</b> 41:15</p> <p><b>Meanwhile</b> 82:17</p> <p><b>measures</b> 11:14 15:1 20:22 32:7 63:16 66:4,8 67:1 68:13</p> <p><b>measuring</b> 20:5</p> <p><b>mechanic</b> 84:7</p> <p><b>mechanisms</b> 19:19</p> <p><b>media</b> 7:10</p> <p><b>medium</b> 16:21 77:25</p> <p><b>meet</b> 57:20 71:11 72:6</p> <p><b>meeting</b> 1:2 2:4 3:14 4:9,24 34:7 35:17 37:7 40:3,7 52:15,23</p>	<p>57:17 71:6,18 72:14 85:14</p> <p><b>meetings</b> 3:15 4:1 46:21 56:10,13 71:24 72:19</p> <p><b>melt</b> 48:4</p> <p><b>member</b> 55:19</p> <p><b>members</b> 22:5 56:2</p> <p><b>mention</b> 37:5</p> <p><b>mentioned</b> 11:21 23:14 31:19 33:15 35:16 36:2 37:2 43:8 48:1 49:17 50:9 56:19 64:16 76:17 79:22 82:22 83:13</p> <p><b>mentioning</b> 17:20</p> <p><b>methods</b> 5:18 19:9 50:2</p> <p><b>metropolitan</b> 67:4 87:1</p> <p><b>mic</b> 36:17</p> <p><b>Michael</b> 77:8</p> <p><b>Michigan</b> 5:3 12:13,21 14:6 23:15 25:23 28:11 29:24 30:6,13,25 31:10 32:6 52:20 60:15,18 67:6 72:2 74:18 76:19 80:24 81:22</p> <p><b>microphone</b> 63:9</p> <p><b>Midwest</b> 62:4 74:22</p> <p><b>migration</b> 44:7</p> <p><b>migrations</b> 49:2</p> <p><b>mile</b> 67:11</p> <p><b>miles</b> 10:14 60:14,17,23 76:18</p>	<p><b>milestone</b> 5:9</p> <p><b>million</b> 14:11 23:1 31:6 33:8 52:18 53:2 70:8</p> <p><b>millions</b> 38:6</p> <p><b>Milwaukee</b> 30:19 72:14</p> <p><b>mind</b> 69:22 87:11</p> <p><b>mine</b> 74:10</p> <p><b>Minnesota</b> 80:24</p> <p><b>minute</b> 64:10</p> <p><b>minutes</b> 9:15 16:6 36:21</p> <p><b>misleading</b> 19:23</p> <p><b>mispronounce</b> 36:16</p> <p><b>missed</b> 50:8</p> <p><b>missions</b> 80:1</p> <p><b>Mississippi</b> 1:6 2:4 3:9 5:10,15,16 10:7 12:18,22 13:5,16 14:7,21 17:14 35:21 39:2 40:14 43:17 49:25 64:18 74:17 77:20,25 78:22,24 83:17</p> <p><b>mitigate</b> 11:18 62:25 65:20</p> <p><b>mitigating</b> 49:10</p> <p><b>mitigation</b> 14:25 32:7 33:3,13 34:9 40:17 48:20 64:1 75:24 82:23 83:2</p> <p><b>mixing</b> 18:1</p> <p><b>model</b> 84:13,23,25</p> <p><b>modeling</b> 29:14 43:25 84:18</p> <p><b>models</b> 29:14 85:2,8</p> <p><b>moderating</b> 2:8</p>
--	---	---	--

<p><b>MODERATOR</b> 1:21</p> <p><b>modification</b> 68:9,12 77:5</p> <p><b>modifications</b> 75:10</p> <p><b>modify</b> 68:20</p> <p><b>modifying</b> 18:14</p> <p><b>moment</b> 40:5</p> <p><b>money</b> 38:9 56:23 59:21 79:12 83:7,16</p> <p><b>monies</b> 79:17</p> <p><b>monitor</b> 26:11</p> <p><b>monitoring</b> 26:23 53:16</p> <p><b>monitors</b> 64:7,8</p> <p><b>Monongahela</b> 41:8</p> <p><b>month</b> 2:22</p> <p><b>months</b> 12:5,7</p> <p><b>Mother</b> 63:2</p> <p><b>motor</b> 52:6</p> <p><b>move</b> 15:13 16:15 19:8,12,15 21:19 27:1 28:16 43:22 76:7,10,12 85:13</p> <p><b>moved</b> 60:18,19</p> <p><b>moves</b> 17:6</p> <p><b>moving</b> 6:23 13:11 19:9 40:16 43:11 75:2,3,4 87:4</p> <p><b>mulling</b> 65:17</p> <p><b>multiple</b> 87:3</p> <p><b>multipronged</b> 52:18</p> <p><b>municipal-treated</b> 13:24</p> <p><b>Murray</b> 57:12</p> <p><b>muscle</b> 45:6</p>	<p><b>myself</b> 55:19 57:19</p> <hr/> <p style="text-align: center;">N</p> <hr/> <p><b>Nancy</b> 52:21</p> <p><b>Nate</b> 37:16 39:24,25</p> <p><b>national</b> 8:11 41:3 79:14</p> <p><b>Nations</b> 57:22</p> <p><b>native</b> 58:6 84:15</p> <p><b>natural</b> 40:20 52:5 56:9 63:2 67:6 68:7</p> <p><b>Nature</b> 37:18</p> <p><b>Nature-type</b> 63:2</p> <p><b>navigable</b> 27:10</p> <p><b>navigation</b> 13:18,19,20 18:10,16 24:7 26:17 31:23,25 33:1 53:5</p> <p><b>necessarily</b> 22:10</p> <p><b>necessary</b> 15:11,12 22:22 33:2 66:1 68:16 69:5 82:7</p> <p><b>neighborhoods</b> 11:23</p> <p><b>netting</b> 60:10</p> <p><b>network</b> 25:4</p> <p><b>neutral</b> 86:16</p> <p><b>news</b> 13:21 64:15</p> <p><b>night</b> 71:18</p> <p><b>nine</b> 3:14</p> <p><b>nitrogen</b> 30:17</p> <p><b>noise</b> 52:7</p> <p><b>none</b> 45:3</p> <p><b>non-federal</b> 80:17</p> <p><b>nongovernmental</b> 6:6</p> <p><b>nonstructural</b></p>	<p>20:20 22:14,19 66:8 68:13</p> <p><b>nor</b> 6:3</p> <p><b>normally</b> 14:5 24:9 54:25 72:5 86:8</p> <p><b>Northwest</b> 27:18</p> <p><b>notch</b> 18:4</p> <p><b>note</b> 59:12 65:5 87:11</p> <p><b>noted</b> 78:3</p> <p><b>notes</b> 88:7</p> <p><b>nothing</b> 22:16 35:3 70:3 85:8</p> <p><b>noticed</b> 32:14</p> <p><b>noticing</b> 60:12</p> <p><b>novel</b> 7:17 18:24 44:9</p> <p><b>November</b> 9:24</p> <p><b>nowadays</b> 64:7</p> <p><b>nuance</b> 76:5</p> <p><b>nuisance</b> 2:17 6:18 10:6 38:12 51:7 65:18</p> <p><b>nut</b> 29:3</p> <p><b>nutrients</b> 30:16 85:2</p> <hr/> <p style="text-align: center;">O</p> <hr/> <p><b>Obama</b> 53:25</p> <p><b>Obert</b> 39:24 42:2,3 67:8</p> <p><b>O-B-E-R-T</b> 42:4</p> <p><b>objective</b> 5:23</p> <p><b>observant</b> 85:25</p> <p><b>obtaining</b> 43:3</p> <p><b>obviously</b> 56:4</p> <p><b>occasions</b> 45:7,8</p> <p><b>offer</b> 3:11 5:24 55:10 79:9</p>	<p><b>offered</b> 2:10</p> <p><b>office</b> 57:8,9</p> <p><b>officials</b> 52:17 56:5</p> <p><b>Ohio</b> 41:5,6,8 42:15 83:18</p> <p><b>okay</b> 29:7</p> <p><b>ones</b> 59:13 77:21 78:22</p> <p><b>one-way</b> 26:3,4</p> <p><b>ongoing</b> 19:25 69:7</p> <p><b>online</b> 7:15 8:24 64:11 73:24</p> <p><b>Ontario</b> 40:9</p> <p><b>open</b> 4:8 8:18 11:22 18:9 29:22,24 32:22,25 33:1 36:10 71:15</p> <p><b>open-comment</b> 4:7</p> <p><b>opening</b> 11:21 53:5</p> <p><b>operate</b> 13:9 26:15</p> <p><b>operates</b> 18:8</p> <p><b>operating</b> 20:15</p> <p><b>operation</b> 45:18 83:23</p> <p><b>operations</b> 60:10</p> <p><b>operators</b> 81:7</p> <p><b>opportunities</b> 5:12 75:23</p> <p><b>opportunity</b> 4:13 12:21 18:21 36:18,22,24 40:4,11 41:25 85:19 87:13</p> <p><b>opposed</b> 11:5 76:15</p> <p><b>opposite</b> 16:20</p> <p><b>optimize</b> 18:22 28:12 29:16</p>
--	--	--	--



<p>66:18</p> <p><b>options</b> 5:6 6:15              10:4 11:9,12              35:22 46:16,23              69:1 73:13,16              81:15 85:7</p> <p><b>order</b> 36:18 49:18              66:1 73:3 77:3              80:3 84:1</p> <p><b>organization</b>              70:15</p> <p><b>organizations</b>              45:13 46:13</p> <p><b>others</b> 37:25 39:18</p> <p><b>otherwise</b> 2:5</p> <p><b>ours</b> 46:15</p> <p><b>outline</b> 10:8</p> <p><b>outlined</b> 22:15              33:22 66:7,20</p> <p><b>outlines</b> 5:17</p> <p><b>outreach</b> 21:11              42:6</p> <p><b>outset</b> 33:15 35:16              46:7</p> <p><b>outside</b> 8:10 18:9              34:18 50:5              51:4,12</p> <p><b>overall</b> 72:16</p> <p><b>overflows</b> 32:3</p> <p><b>owners</b> 81:7</p> <hr/> <p style="text-align: center;">P</p> <hr/> <p><b>P.E</b> 1:16</p> <p><b>p.m</b> 1:10 2:1 87:18</p> <p><b>PA</b> 1:12</p> <p><b>packed</b> 72:2</p> <p><b>pages</b> 7:16,17              17:15 71:16,17</p> <p><b>pain-stakingly</b> 6:5</p> <p><b>paint</b> 5:23</p> <p><b>pair</b> 19:6 23:25</p>	<p><b>palpable</b> 68:3</p> <p><b>pamphlet</b> 3:2</p> <p><b>panel</b> 1:15 3:5              40:3</p> <p><b>panelists</b> 3:11              36:25 85:19</p> <p><b>paper</b> 2:11,14              78:16</p> <p><b>parallel</b> 23:25</p> <p><b>participants</b> 72:13</p> <p><b>participate</b> 36:19</p> <p><b>participation</b>              85:17</p> <p><b>particular</b> 15:11              16:16 25:10              29:21 72:10              78:14</p> <p><b>particularly</b> 78:10</p> <p><b>partner</b> 20:16</p> <p><b>partnered</b> 59:4</p> <p><b>partners</b> 6:22              39:14 46:5,15,22</p> <p><b>partnership</b> 47:14</p> <p><b>Partsch</b> 55:11</p> <p><b>P-A-R-T-S-C-H</b>              55:12</p> <p><b>pass</b> 24:8</p> <p><b>passage</b> 70:8</p> <p><b>passion</b> 72:22</p> <p><b>passionate</b> 8:7</p> <p><b>past</b> 26:13 53:10              62:15</p> <p><b>path</b> 35:15 36:6              73:12</p> <p><b>pathway</b> 34:19              51:14,16 62:7</p> <p><b>pathways</b>              10:16,19,21 11:6              12:17,24 19:12              38:23 49:17 50:5</p> <p><b>pellets</b> 68:20</p>	<p><b>Pennsylvania</b> 41:5              42:4 55:13 57:7</p> <p><b>Pennsylvania's</b>              57:14</p> <p><b>people</b> 7:19,24              36:24 37:23 54:6              55:12 71:25              72:20 78:10              79:4,9 81:10              84:14</p> <p><b>per</b> 23:3,4 31:7              53:7 76:14</p> <p><b>percent</b> 13:22              51:18 80:12</p> <p><b>percentage</b> 31:19</p> <p><b>perennial</b> 11:2</p> <p><b>perform</b> 16:1</p> <p><b>perhaps</b> 21:2 51:7              66:15 68:3,13,19</p> <p><b>period</b> 4:7 35:23              72:25</p> <p><b>permanent</b> 40:15              41:16</p> <p><b>person</b> 44:14              52:22</p> <p><b>perspectives</b> 45:15</p> <p><b>pesticides</b> 17:4</p> <p><b>pharmaceuticals</b>              31:9</p> <p><b>phase</b> 69:4</p> <p><b>phonetic</b> 44:12              73:22</p> <p><b>phosphorous</b>              30:16</p> <p><b>physical</b>              17:4,23,25 18:15              20:24 27:4,8,20              28:3,8 29:7,13              31:17 32:13,21              33:2,4,9 34:15              40:13,21 53:6              66:6,23</p> <p><b>pick</b> 48:6 87:14</p>	<p><b>picture</b> 5:23 21:10</p> <p><b>piece</b> 2:11 37:21</p> <p><b>pipe</b> 48:5,6</p> <p><b>placed</b> 18:9 28:11              29:13,15</p> <p><b>plan</b> 19:21,22              20:19 22:19 23:6              25:18 28:2 41:15              66:2</p> <p><b>planned</b> 2:12</p> <p><b>plans</b> 6:4 16:8,25              32:11 65:19 82:4</p> <p><b>plant</b> 21:7,10              23:19 24:11</p> <p><b>plants</b> 23:17 24:5              30:3,4 31:8,21</p> <p><b>play</b> 8:8</p> <p><b>please</b> 37:9 61:5              75:12 79:7 85:11              87:11</p> <p><b>pleasure</b> 4:21</p> <p><b>plenty</b> 3:12 65:13              87:15</p> <p><b>plug</b> 21:13</p> <p><b>plugs</b> 43:8</p> <p><b>point</b> 13:6,8              24:2,19,24 26:2              31:16 36:1 38:19              39:5 64:4</p> <p><b>pointed</b> 41:14</p> <p><b>points</b> 12:19 13:2              14:6 23:8,10,13              25:21,23 26:1              27:5 29:15</p> <p><b>poised</b> 21:7</p> <p><b>poison</b> 45:25</p> <p><b>policies</b> 54:14</p> <p><b>pollutant</b> 30:24</p> <p><b>pond</b> 49:12</p> <p><b>ponds</b> 49:8</p> <p><b>population</b> 20:17</p>
--	---	--	---

<p>21:9 59:7 65:12 <b>populations</b> 21:3 52:20 61:14 65:6,8 <b>port</b> 48:24 <b>portion</b> 48:2 <b>pose</b> 49:5 <b>positive</b> 72:17 <b>possibility</b> 39:17 59:16 <b>possible</b> 11:22 41:13 43:20 54:22 <b>possibly</b> 18:18 <b>poster</b> 38:24 <b>potential</b> 5:18 10:16,18 14:14,16,25 15:21 17:10 20:22 21:20 22:17 24:16 29:25 31:25 34:23 50:5,6 61:11,14 62:6,20 63:2,21 67:19,24 68:4 77:14 78:21 81:16 <b>potentially</b> 15:3 16:15 21:6 24:25 26:12 31:10 59:10 77:19,24 81:11 85:3 <b>pound</b> 76:14 <b>power</b> 83:25 <b>practical</b> 84:4 <b>practices</b> 21:16 22:12 <b>precipitation</b> 10:23 25:8 26:19,22 62:20 63:11 64:2 <b>prefer</b> 45:3 <b>prepare</b> 58:25</p>	<p><b>prepared</b> 37:25 <b>preregistered</b> 36:14 47:2 <b>presence</b> 47:18,19 <b>present</b> 3:17 4:8 15:17 26:25 88:2 <b>presentation</b> 3:12 48:2 50:9 <b>presentations</b> 36:10 <b>presented</b> 3:22 4:1 34:14 <b>presenting</b> 15:7 <b>presents</b> 5:18 <b>preservation</b> 68:7 <b>President</b> 54:20 <b>President's</b> 52:22 <b>Presque</b> 78:6 <b>pressure</b> 14:11 45:21 <b>pressures</b> 29:20 45:15 <b>pretty</b> 16:11 17:24 24:13 83:3 <b>prevent</b> 5:12 6:11 10:5 11:10 13:10 17:6 43:2 50:2,22 51:15 52:19 61:18 69:2 70:11 77:17 <b>preventing</b> 34:16 <b>prevention</b> 5:18 6:17 20:1 60:6 <b>prevents</b> 17:25 <b>price</b> 52:18 <b>primarily</b> 5:1 10:22 27:9 58:23 <b>primary</b> 12:17 13:15 14:19,20 <b>priority</b> 6:3 <b>private</b> 6:7 58:5</p>	<p><b>probability</b> 16:18 <b>probably</b> 38:1 42:9 70:15 77:14 84:9 85:6 86:23 <b>problem</b> 45:10 72:10 74:5,23 77:11 85:18 <b>problems</b> 83:22 <b>proceedings</b> 2:1 87:18 88:3,4 <b>process</b> 43:12 55:4 86:7 <b>processes</b> 44:6 <b>produce</b> 39:17 74:8 <b>produced</b> 88:5 <b>product</b> 83:15 <b>profiled</b> 41:3 <b>program</b> 42:5 86:8 <b>project</b> 2:16,24 3:8 8:15 9:5 32:24 37:24 38:2 49:20 58:8 65:19 73:4 80:12 86:8 <b>projects</b> 39:8 75:18 80:9 <b>propensity</b> 28:17 <b>proposed</b> 83:19 <b>protect</b> 8:11 <b>Protection</b> 57:8 <b>proven</b> 42:14 <b>provide</b> 6:24 50:6 76:1,2 <b>provides</b> 14:23 40:15 <b>public</b> 1:2 3:15 4:24 5:25 6:10,21 22:5 40:3,7 56:3,4 79:7,22 87:11 <b>pull</b> 21:13 65:9</p>	<p><b>pulled</b> 65:2 <b>pulls</b> 23:19 24:6 <b>pump</b> 24:20 <b>pumps</b> 43:18 44:1 <b>purple</b> 27:6 <b>purpose</b> 5:22 10:3 12:2 <b>purpose-built</b> 18:15 <b>purposes</b> 74:3 <b>pushed</b> 7:9 <b>putting</b> 37:20 55:24 59:18</p> <hr/> <p style="text-align: center;"><b>Q</b></p> <hr/> <p><b>quality</b> 26:16 29:25 40:18 52:23 53:19 75:20 <b>quantify</b> 38:8 <b>question</b> 42:21 43:6 47:6 48:18 49:3,6 51:23 52:14 53:10 55:10,15 56:6,23 57:3 71:10 79:21 83:12 <b>questions</b> 2:15 3:13,21 36:11 37:1 48:14 49:16 55:20,22 61:21 64:21 65:14 71:20 79:3,6 82:11 83:21 85:11 87:7 <b>quick</b> 6:24 <b>quicker</b> 66:20 <b>quickly</b> 44:20 60:5 <b>Quinn</b> 59:24 <b>quite</b> 5:2 37:23 40:10 63:23 <b>quote/unquote</b> 63:18</p>
--	---	---	---



<p style="text-align: center;"><u>R</u></p> <p><b>rail</b> 75:4 76:13</p> <p><b>railroad</b> 75:1</p> <p><b>rain</b> 49:13 64:10 74:7,8</p> <p><b>rainfall</b> 10:22 14:8 24:17 26:18,22 50:11</p> <p><b>raise</b> 49:6 51:19</p> <p><b>raised</b> 37:1</p> <p><b>raising</b> 49:12 51:18</p> <p><b>range</b> 5:6 6:15 9:13,19 10:4 11:9 15:4,9,17 16:7,14 38:20 50:4 73:12 78:17 85:7</p> <p><b>RE</b> 1:3</p> <p><b>reach</b> 45:10 78:4</p> <p><b>reaction</b> 74:15</p> <p><b>readers</b> 5:19</p> <p><b>reading</b> 87:16</p> <p><b>ready</b> 48:12</p> <p><b>realized</b> 60:5</p> <p><b>really</b> 3:16 14:22 15:8,10 16:2,22,24 18:11 19:24 20:21 21:23 25:9 26:5 29:3,16,20 33:15 34:11 35:5,12 38:21 44:18 45:5,9,24 49:14 50:19 59:14 65:7 71:13 73:11,17,18 75:22 81:14 84:4</p> <p><b>reason</b> 11:22 31:18 49:1 62:14 77:13</p> <p><b>reasons</b> 4:25 50:17</p>	<p><b>receive</b> 57:16</p> <p><b>received</b> 7:11 9:23 10:1 12:1,5</p> <p><b>receiving</b> 13:1,3</p> <p><b>recently</b> 25:7 83:10</p> <p><b>reclamation</b> 30:2 31:21 87:1</p> <p><b>recognize</b> 37:16</p> <p><b>recognizes</b> 85:5</p> <p><b>recommendations</b> 6:3</p> <p><b>record</b> 56:4 79:7</p> <p><b>recorded</b> 65:3</p> <p><b>recording</b> 37:7</p> <p><b>records</b> 65:4</p> <p><b>recreation</b> 13:19</p> <p><b>recreational</b> 19:15 24:7 27:13 74:3</p> <p><b>recreationally</b> 75:9</p> <p><b>redirect</b> 54:1</p> <p><b>reduce</b> 29:8 39:19 53:14 59:6</p> <p><b>reduced</b> 27:23,24</p> <p><b>reducing</b> 61:14</p> <p><b>reduction</b> 20:6 34:24 66:10,19</p> <p><b>reference</b> 32:19</p> <p><b>references</b> 78:18</p> <p><b>refinement</b> 67:19</p> <p><b>regard</b> 9:18 15:6 16:5 19:25 28:5 32:2 34:3,20 35:22 36:7 43:6 44:3 46:22,23 47:10 51:17,24 55:21 58:21 59:5 62:11 63:4 66:16 69:11 76:7 84:5,17,20,25</p>	<p>85:8</p> <p><b>Regarding</b> 49:16</p> <p><b>Regardless</b> 38:10</p> <p><b>Regional</b> 57:6</p> <p><b>register</b> 4:13 47:4</p> <p><b>registered</b> 36:12</p> <p><b>registration</b> 4:11 87:14</p> <p><b>regulations</b> 21:18,20 22:2,4,9 54:5</p> <p><b>regulatorily</b> 67:23</p> <p><b>regulatory</b> 67:16 68:1</p> <p><b>reiterates</b> 70:20</p> <p><b>released</b> 2:22 46:18</p> <p><b>remains</b> 6:21</p> <p><b>remarks</b> 11:21 85:20</p> <p><b>remediation</b> 32:4</p> <p><b>remember</b> 26:1 42:22 66:23 75:22 78:25 79:1</p> <p><b>remind</b> 8:6</p> <p><b>removal</b> 30:16 44:3</p> <p><b>report</b> 1:5 2:20 3:18,22 5:17,21,22 6:2,6,13 7:1,12,15 8:19 9:16 12:5,7 14:22,23 15:16 16:8 17:1,16 34:2 35:2,22 40:20 71:7 81:13,15</p> <p><b>reported</b> 44:24 88:4</p> <p><b>Reporter</b> 88:12</p> <p><b>REPORTER'S</b></p>	<p>88:1</p> <p><b>reporting</b> 68:17</p> <p><b>reports</b> 6:14 47:11 62:1</p> <p><b>represent</b> 27:7 37:18 81:10</p> <p><b>representative</b> 55:1 82:19</p> <p><b>representatives</b> 7:2,7,9 72:4 73:10</p> <p><b>represented</b> 57:12</p> <p><b>representing</b> 37:12 42:4</p> <p><b>represents</b> 53:18</p> <p><b>require</b> 20:23 22:1</p> <p><b>required</b> 75:25</p> <p><b>requirements</b> 33:3</p> <p><b>reroute</b> 23:18 31:14</p> <p><b>research</b> 40:19 42:7 43:16 47:16,21 68:24,25 69:3,7 78:15 83:5</p> <p><b>researched</b> 48:8</p> <p><b>researchers</b> 48:9</p> <p><b>reservoir</b> 25:14 27:22 29:19</p> <p><b>reservoirs</b> 25:4 27:17 28:22 82:24 83:13</p> <p><b>residence</b> 31:1</p> <p><b>resident</b> 41:19</p> <p><b>residents</b> 14:12 27:18 28:18 76:3</p> <p><b>residual</b> 34:13 51:5</p> <p><b>resolution</b> 40:15</p> <p><b>resonated</b> 86:22</p> <p><b>resource</b> 35:9 56:9</p>
---	---	--	--

<p>67:6 68:18 73:11  <b>resources</b> 9:25                  20:17 22:22                  35:10 49:22  <b>respect</b> 9:22 22:6  <b>respond</b> 57:5  <b>responding</b> 61:1  <b>response</b> 52:5                  57:22 72:16  <b>responsibility</b> 6:20                  21:23 22:6 34:20                  35:5 80:17,18  <b>responsible</b> 20:13                  67:17  <b>rest</b> 8:9 16:23                  74:22  <b>Restoring</b> 40:20  <b>restrict</b> 36:20  <b>result</b> 50:11  <b>results</b> 3:17  <b>retrofit</b> 76:22  <b>reverberation</b>                  52:7  <b>rid</b> 60:7  <b>right-hand</b> 17:22                  19:10  <b>rise</b> 41:10  <b>risk</b> 14:3 16:17,21                  20:6 26:17 27:15                  28:18 29:2,9,16                  34:13,24 49:5                  53:14 60:17                  62:25 66:10,19                  67:3 76:2 77:25  <b>risks</b> 39:20 51:5  <b>river</b> 1:6 2:4 3:9                  5:10,15,16 10:7                  12:18,22                  13:5,16,23                  14:7,21 17:14                  23:16 29:23                  35:21 40:14                  41:5,7 42:9,16</p>	<p>49:25 53:4 54:1                  61:10 64:16,18                  77:20,25                  78:22,24                  83:11,18,20 84:4  <b>Rivers</b> 41:8  <b>road</b> 41:24  <b>Roger</b> 55:11  <b>room</b> 7:20 8:3,5                  86:6  <b>Rossman</b> 64:23                  79:8  <b>roughly</b> 52:17                  70:5  <b>round</b> 36:23  <b>routes</b> 51:3  <b>rule</b> 80:3  <b>run</b> 45:18 56:16  <b>running</b> 74:4  <b>runoff</b> 74:7  <hr style="width: 20%; margin: 10px auto;"/> <p style="text-align: center;">S</p> <hr style="width: 20%; margin: 10px auto;"/> <b>safely</b> 60:24  <b>Saint</b> 40:9  <b>salt</b> 44:6  <b>samples</b> 53:7  <b>Sandusky</b> 61:10  <b>sandwich</b> 84:9  <b>Sanitary</b> 13:3                  32:19 42:23 53:4                  60:24 67:10  <b>saw</b> 64:15 78:4  <b>scale</b> 43:13  <b>Scalise</b> 88:12  <b>scenario</b> 28:15                  29:21 32:2 58:21                  61:25 66:24 82:8  <b>scenarios</b> 29:2                  32:18 66:18                  67:19  <b>scheduled</b> 3:15</p>	<p><b>science</b> 45:18  <b>scientific</b> 84:13  <b>scientists</b> 9:12                  45:21 46:17                  78:21  <b>scope</b> 9:22 51:12  <b>scoping</b> 58:5 72:17  <b>screened</b> 69:4  <b>screening</b> 17:4  <b>Sea</b> 42:4,5  <b>seat</b> 57:13  <b>Seattle</b> 7:24  <b>Seaway</b> 51:1  <b>second</b> 25:18                  40:25 84:8  <b>secondly</b> 2:14 3:20                  37:11 44:25                  51:17  <b>Secretary</b> 4:23                  70:18  <b>seem</b> 39:10 70:6                  74:11 75:4  <b>seemed</b> 74:8  <b>seems</b> 39:7 41:22                  49:4 74:23 78:10  <b>seen</b> 25:7 29:1                  44:24 45:7 48:16                  62:19 65:11                  68:7,9 70:16                  72:13 76:11 78:8                  84:6  <b>selected</b> 29:15  <b>selection</b> 67:18  <b>senator</b> 56:22  <b>senatorial</b> 72:3  <b>sense</b> 73:15 81:21  <b>sent</b> 58:5  <b>separation</b> 12:14                  28:3,4,7 34:16                  40:13,21 41:16                  66:6,24</p>	<p><b>series</b> 11:6 12:16  <b>serious</b> 72:22  <b>Service</b> 47:15  <b>session</b> 72:17  <b>several</b> 3:19 5:23                  6:19 56:11 75:17                  82:24  <b>sewer</b> 32:3  <b>share</b> 80:10  <b>shared</b> 6:19 21:23                  22:6 34:19 35:5  <b>sheet</b> 2:14 18:12  <b>shift</b> 75:8  <b>shifting</b> 75:7  <b>Ship</b> 13:3 32:20                  60:24  <b>shipping</b> 53:4 75:2  <b>shocking</b> 53:6  <b>short</b> 39:16  <b>shown</b> 49:11  <b>shy</b> 79:7  <b>sides</b> 18:12  <b>signal</b> 48:6  <b>significance</b> 25:7  <b>significant</b> 10:22                  11:5 13:25                  14:7,11 15:25                  24:16                  25:8,13,14,16                  27:12,13,22                  28:21 29:5,23,25                  30:2,15,23                  31:4,19,24 32:5                  33:6,11 34:2,12                  35:7 38:18 46:1                  48:2 49:5,13                  50:19 53:14,15                  60:20 62:20 63:2                  64:2 67:2,4,5                  70:22  <b>silver</b> 52:1 61:1,8  <b>similar</b> 30:18</p>
--	--	--	---

<p>65:10 <b>simple</b> 17:24 50:15 <b>simply</b> 23:7 <b>single</b> 12:25 13:2 15:24 25:20 31:2 65:6 <b>singular</b> 19:6 <b>sink</b> 69:18 <b>sir</b> 9:4 54:9 71:22 <b>sits</b> 86:9 <b>sitting</b> 57:10 <b>six</b> 35:18 <b>sixth</b> 3:14 <b>size</b> 44:1 <b>slide</b> 12:12 19:11 <b>slides</b> 8:17 <b>slow</b> 44:21 <b>small</b> 29:21 <b>smaller</b> 27:21 <b>snapshot</b> 7:13 <b>solution</b> 46:19 66:6 74:12 81:24 <b>solutions</b> 39:15,21 <b>solve</b> 45:10 85:18 <b>somehow</b> 83:21 <b>someone</b> 49:11 <b>somewhere</b> 26:20 47:8 74:9 <b>sooner</b> 39:19,21 <b>sorry</b> 44:16 79:1 <b>sort</b> 8:22 11:16 44:8 59:8 71:14,15 82:6,18 <b>sound</b> 52:7 <b>source</b> 49:2 <b>South</b> 83:23 <b>Southeast</b> 27:19 <b>spawn</b> 59:21</p>	<p><b>speak</b> 12:11 36:14,23,24 49:16 53:17,20 56:5 63:8 75:14 80:13 82:9 <b>speakers</b> 42:19 47:2 <b>speaking</b> 10:11 77:23 <b>speaks</b> 20:21 78:16 <b>species</b> 2:17 5:14 6:18 9:10 10:6,16 11:11 13:10 16:6,13,14,19 17:3,7,9 18:22 19:3,7,11,18,25 20:18 21:3,19 22:7,10 23:12,17,22 24:4,10,24 26:4,12,24 34:17,18,21 35:4,15 36:7 38:10,12,25 39:1,3,11,17 40:16,24 42:6 43:14 44:3 46:24 50:7,22,24 51:2,4,11 54:22 61:16 65:18 66:17 68:14 69:2 71:2 77:22 78:9,13,16,17,19 79:24 84:15 <b>specific</b> 11:12 20:18 48:9 50:1 58:21 63:16,17 65:19,24 66:16 68:14 69:12 77:22 78:14 79:25 80:4 85:8 <b>specifically</b> 23:21 34:10 41:1,4,9 43:13 46:11,12 47:25 49:24 50:22 56:16,18</p>	<p>59:7,23 61:7,19 62:11 64:9 68:22,23 69:5 72:11 <b>specifics</b> 84:18 <b>speed</b> 42:21 84:2 <b>spelling</b> 37:10 <b>spend</b> 9:14 10:10,12 16:6 56:23 73:14 86:1 <b>spent</b> 23:2 38:9 42:5 43:17 <b>split</b> 32:14 84:8 <b>spoke</b> 21:24 53:25 <b>spread</b> 6:17 21:7 25:22 65:18 <b>spreads</b> 6:4 <b>squares</b> 30:1 <b>St</b> 51:1 <b>stack</b> 62:21 <b>staff</b> 8:3 <b>staffers</b> 7:4 <b>stage</b> 7:20 <b>stages</b> 24:4 <b>stakeholders</b> 5:25 6:7 <b>stand</b> 36:16 63:1 <b>standpoint</b> 62:13 <b>start</b> 7:14 36:11 69:10 71:7 82:5,11 83:4 <b>started</b> 6:25 13:21 79:11 <b>starts</b> 45:6 64:10 <b>state</b> 6:6,20 11:19 22:22 23:3,4 35:8 40:7 46:7 51:21,22 52:16 55:13 56:8 59:4 61:2 67:16 68:1,17 72:2,4,5,6 73:10</p>	<p>75:14 80:24 81:21 82:18 <b>stated</b> 14:18 15:15 <b>states</b> 20:4,16 49:8 54:22 56:12 58:7 59:3 79:14 81:6 <b>stations</b> 7:10 <b>statistically</b> 76:9 <b>statistics</b> 63:17 <b>stenographer</b> 37:6 <b>stenographic</b> 88:7 <b>stenographically</b> 88:4 <b>stepdaughter</b> 74:9 <b>steps</b> 30:15 41:15,18 67:1 73:17 <b>stick</b> 20:6 87:6 <b>stop</b> 22:10 40:11 54:7 <b>stopping</b> 40:16 42:11 <b>stores</b> 82:25 <b>storm</b> 25:5 62:12,15,16,21 <b>strategic</b> 16:5 34:21 36:6 46:23 50:20 <b>stream</b> 13:1,3 14:2 30:22 31:20,23 <b>streams</b> 10:24 30:18 50:12 <b>STREET</b> 1:12 <b>stretch</b> 40:9 <b>strong</b> 84:7 <b>strove</b> 6:9 <b>structure</b> 20:24 <b>structures</b> 27:23 44:7 <b>studied</b> 48:19</p>
--	--	--	---

<p><b>studies</b> 42:9 68:7 <b>studying</b> 73:15 <b>stuff</b> 45:24 <b>Stutley</b> 52:21 53:18 <b>submit</b> 4:15 8:24 37:2 56:3 87:13 <b>submitted</b> 4:2 <b>subsequent</b> 20:7 22:15 <b>subsidize</b> 59:6 <b>suburbs</b> 14:12 <b>sufficient</b> 25:5 63:1 <b>suggesting</b> 68:12 <b>summarize</b> 34:4 <b>summary</b> 2:19,20,24 7:12 37:22 <b>summer</b> 78:3 <b>Summit</b> 52:16 <b>supplied</b> 26:21 <b>supply</b> 13:20 <b>support</b> 33:17 44:17 <b>supposed</b> 52:24 54:5 <b>Supreme</b> 53:24 <b>sure</b> 8:11 9:21 24:12,15 27:10,17 30:7 51:18 53:9 62:9,23 63:8,25 65:22 67:2,15 68:11 72:11 73:2 75:13 76:4,24 77:22 81:4 <b>surface</b> 18:1 <b>surprised</b> 77:9 <b>surrounding</b> 14:12 17:12 25:12 28:19</p>	<p>83:25 <b>Survey</b> 68:18 <b>sustain</b> 59:13 65:7 <b>sustained</b> 64:14 65:6 <b>sustaining</b> 65:11 <b>swim</b> 19:12 <b>switch</b> 33:9 <b>syllabus</b> 12:2 <b>system</b> 6:12 10:12 11:7,15 12:10,11,15,23 13:15 14:1,5,19 17:13 18:22 19:16 23:9,15 24:6 25:22 26:15,21 27:6 28:6,17 30:14 32:15,22 33:14 42:13 43:7,12 48:1 50:6,16,23 74:5,20 82:16 <b>systematic-type</b> 63:20 <b>systems</b> 43:19 74:13 <hr/><p style="text-align: center;">T</p><hr/><b>table</b> 81:4 87:15,17 <b>tables</b> 34:4 <b>tag</b> 52:18 <b>taking</b> 18:13 31:23 41:15 67:10 71:7,8 73:20 76:11 79:22 83:1 <b>talk</b> 17:19 40:4 55:7,13,22 58:1 69:23 85:15 <b>talked</b> 42:16 45:1 57:23 70:2 <b>talking</b> 9:15,16 10:13 11:4 13:13 16:7 31:5 51:6,7</p>	<p>56:22 70:25 71:1,3 83:4 <b>talks</b> 82:12,23 83:2 <b>target</b> 61:15 <b>targeted</b> 19:17 <b>Taste</b> 60:2 <b>team</b> 6:4 9:11 29:6 55:20 86:4 <b>technical</b> 7:18 <b>technologies</b> 6:16 10:4 11:10,12 17:17,19 20:20 22:20 23:5,7 29:7 33:4,10 34:11 66:19 67:24 69:1 <b>technology</b> 19:5 25:19 27:25 32:13 66:9 83:5 <b>technology's</b> 64:19 <b>telemetry</b> 70:7 <b>temperature</b> 20:10 <b>temporary</b> 10:25 <b>tend</b> 52:10 <b>tenth</b> 41:20 <b>ten-year</b> 66:11 <b>terms</b> 38:6 61:24 68:12 73:25 <b>terrific</b> 57:18 <b>testing</b> 43:24 53:7 <b>tests</b> 48:3 <b>thank</b> 4:17 9:3,4 36:9 37:19,20 39:21 40:3 41:25 44:11 46:1,3,25 49:15 51:24 79:1 85:16,21 87:8 <b>Thanks</b> 39:23 43:5 87:10,17 <b>that's</b> 2:25 4:25 7:16 21:23 29:3</p>	<p>34:19 35:12 43:3 57:25 59:21 65:6 70:12 76:24 77:1,6 79:20 80:7 82:8,17 85:6 86:14,21 <b>themselves</b> 9:21 17:18 52:12 71:7 <b>they're</b> 69:16 <b>third</b> 41:12 70:1 <b>Thomas</b> 44:12,13 <b>thoughts</b> 76:21 <b>thousands</b> 17:15 <b>throughout</b> 6:7 55:4 64:9 78:3 86:6 <b>throw</b> 59:20 <b>throwing</b> 45:6 <b>thunder</b> 42:18 <b>tile</b> 18:12 <b>timeline</b> 39:6,8 80:22 81:19 <b>timelines</b> 39:12 41:14 81:16 <b>timeliness</b> 86:21 <b>timely</b> 39:20 <b>today</b> 4:8,14,18 9:4,14 16:3 26:16 27:2 31:15 34:7,14 35:12,25 85:23 <b>Today's</b> 3:14 <b>tomorrow</b> 22:21 <b>tonight</b> 5:1 6:19 7:4,12 8:13,22 22:1 36:10,13 37:6,12 43:6 55:6 56:20 64:22 72:14 79:23 81:22 85:17 <b>tonight's</b> 36:19 37:7 85:14</p>
--	---	---	--

<p><b>tons</b> 60:12</p> <p><b>tool</b> 14:4,22 15:16 27:15 33:16,17</p> <p><b>top</b> 21:10 52:22 69:14,15,16</p> <p><b>topic</b> 77:9</p> <p><b>total</b> 13:23 29:18 31:6 33:21 66:11</p> <p><b>tough</b> 13:7 58:21</p> <p><b>toward</b> 14:7 75:19</p> <p><b>towards</b> 13:4,9 19:18 41:16</p> <p><b>track</b> 64:19 68:19</p> <p><b>trade-off</b> 16:1</p> <p><b>trade-offs</b> 34:5</p> <p><b>Traditional</b> 58:22</p> <p><b>traditionally</b> 80:14</p> <p><b>traffic</b> 27:13 28:13 76:9</p> <p><b>training</b> 43:9 52:4</p> <p><b>transcript</b> 37:7 88:6</p> <p><b>transfer</b> 5:13 6:11 10:5,17 11:11 17:6 22:7,18 23:11,12 24:25 25:9 26:6 34:17,18 39:4,9,17 50:2,7,23 51:4,9,11,15 61:18 66:14 69:2 71:2 77:17,25</p> <p><b>transferring</b> 16:19 22:10 26:13</p> <p><b>transparent</b> 11:22</p> <p><b>transport</b> 51:5,20,22</p> <p><b>travel</b> 55:6</p> <p><b>traveling</b> 37:19</p> <p><b>Traverse</b> 58:11</p>	<p><b>treasure</b> 8:12</p> <p><b>treat</b> 23:20 24:23 31:9</p> <p><b>treatment</b> 23:17,18,21 24:11 30:3</p> <p><b>tribal</b> 57:24</p> <p><b>tribes</b> 57:23 58:6,10,13</p> <p><b>tried</b> 16:23 42:14 84:23</p> <p><b>troublesome</b> 78:10</p> <p><b>truck</b> 75:4 76:13,15</p> <p><b>true</b> 88:6</p> <p><b>try</b> 11:21 13:10 17:5 23:8 43:1 51:15 59:5 76:1 81:11 86:23</p> <p><b>trying</b> 9:12 35:20 47:16 54:11 59:7 65:7 70:21 81:14 84:14</p> <p><b>Tuesday</b> 57:17</p> <p><b>tune</b> 18:21 82:20</p> <p><b>tunnel</b> 27:22 29:18</p> <p><b>tunnels</b> 25:4 27:17 31:14</p> <p><b>turn</b> 3:13 8:14 9:1 34:7 36:4 59:19</p> <p><b>turned</b> 12:7</p> <p><b>TV</b> 56:22</p> <p><b>twenty</b> 78:7</p> <p><b>Twenty-five</b> 44:18</p> <p><b>two-way</b> 23:11 25:20</p> <p><b>type</b> 60:25 73:1 83:11</p> <p><b>types</b> 23:4 75:18</p> <p><b>typing</b> 8:2</p>	<p style="text-align: center;">————— U —————</p> <p><b>U.S</b> 1:17,19 4:1 7:21 9:6 47:15 68:18</p> <p><b>undefined</b> 47:14</p> <p><b>understand</b> 13:12 17:24 39:6 47:11 54:12 76:6</p> <p><b>understanding</b> 9:22 47:12 61:9</p> <p><b>unfortunate</b> 55:5</p> <p><b>unfortunately</b> 86:8</p> <p><b>UNIDENTIFIED</b> 44:14</p> <p><b>uniform</b> 86:16</p> <p><b>unimproved</b> 18:10</p> <p><b>unique</b> 6:13 8:21 10:20 12:23 14:13 26:10 86:14</p> <p><b>United</b> 54:21 58:7 59:3</p> <p><b>unknowns</b> 85:4</p> <p><b>untreated</b> 18:1</p> <p><b>upcoming</b> 17:20</p> <p><b>upon</b> 55:8 67:3,5</p> <p><b>upper</b> 18:25 19:10 32:15,16</p> <p><b>upwards</b> 72:13</p> <p><b>urge</b> 41:16</p> <p><b>urgency</b> 44:17 81:21</p> <p><b>USA</b> 58:9</p> <p><b>users</b> 33:14</p> <p><b>USGS</b> 64:6 70:14</p> <p><b>utilize</b> 79:4</p> <p style="text-align: center;">————— V —————</p> <p><b>validate</b> 47:8</p>	<p><b>valuable</b> 45:21</p> <p><b>value</b> 74:21</p> <p><b>variety</b> 5:17 25:1</p> <p><b>various</b> 6:10 34:22 35:8 62:10 80:16</p> <p><b>versa</b> 32:23</p> <p><b>version</b> 2:21</p> <p><b>versus</b> 75:3</p> <p><b>via</b> 76:10,14,15</p> <p><b>viability</b> 85:2</p> <p><b>vice</b> 32:23 54:20</p> <p><b>Virginia</b> 41:6</p> <p><b>virus</b> 51:9</p> <p><b>visibility</b> 46:14</p> <p><b>vision</b> 82:6</p> <p><b>visit</b> 4:5 35:19</p> <p><b>voice</b> 4:25 55:23 71:11,17 85:22</p> <p><b>voices</b> 72:9 79:5</p> <p><b>volume</b> 13:23</p> <p><b>volumes</b> 63:12</p> <p><b>vulnerable</b> 74:18</p> <p style="text-align: center;">————— W —————</p> <p><b>wait</b> 81:25</p> <p><b>waiver</b> 54:4,19</p> <p><b>walls</b> 18:12</p> <p><b>wash</b> 49:13</p> <p><b>Washington</b> 52:15</p> <p><b>wasn't</b> 40:6</p> <p><b>wastewater</b> 13:25 14:2 23:21 30:3,11,13,19 31:8 48:3 74:3,6</p> <p><b>watching</b> 64:11</p> <p><b>water</b> 9:25 13:20 14:5,10 17:6 19:2 21:14,15 23:15,19 24:20,22 25:10</p>
---	--	--	---

<p>26:16,20 27:1                  28:16 29:11,25                  30:2,8,17,21                  31:2,5,7,14,20,2                  1,22,24 40:17                  43:11 44:7 47:18                  48:8 52:7,9 53:7                  54:4,14,20,23                  67:18 68:2,20                  74:1,5,7,13,20                  75:3,19 84:2                  87:1</p> <p><b>waters</b> 12:20,22                  18:1 47:12</p> <p><b>watersheds</b> 41:4</p> <p><b>waterway</b> 6:12                  10:11 11:7,15                  12:10,11,15                  13:14 14:4,19                  17:13 23:9 30:14                  32:15 48:1                  50:6,16 66:25                  76:9,13</p> <p><b>waterways</b> 13:24                  27:4 48:20 49:10                  50:20,23 73:25                  75:10,14                  76:10,12,14</p> <p><b>ways</b> 6:10 19:7,11                  34:17,22 35:1                  39:3 47:22,23                  50:22,24 51:10                  55:17 59:9 65:23                  66:3,7,17 68:19                  81:11</p> <p><b>wealth</b> 84:21</p> <p><b>wear</b> 57:6 86:15</p> <p><b>weather</b> 24:11</p> <p><b>web</b> 3:1</p> <p><b>webinar</b> 7:6</p> <p><b>website</b> 2:25                  4:2,3,5,10 34:1                  35:25 36:12                  37:3,8 55:18,24                  56:15 60:9 65:4                  73:21 78:15</p>	<p>87:13</p> <p><b>websites</b> 64:6</p> <p><b>week</b> 53:7</p> <p><b>weekly</b> 56:12</p> <p><b>weeks</b> 4:22</p> <p><b>weigh</b> 15:25</p> <p><b>Welch</b> 61:23 62:8                  68:5 69:8 72:24                  83:9</p> <p><b>W-E-L-C-H</b> 68:6</p> <p><b>welcome</b> 2:3 4:12                  47:3 56:4</p> <p><b>Weland</b> 48:22</p> <p><b>well-informed</b>                  6:10</p> <p><b>we're</b> 7:4 11:4                  51:6</p> <p><b>west</b> 41:6 74:19</p> <p><b>Wethington</b> 1:16                  3:8 8:16 9:2,3,5                  43:5 46:3 47:10                  49:15 52:3 53:9                  54:9 55:16 56:14                  57:1,25 58:3,20                  61:13 62:6,9                  63:7 65:1,22                  67:15 68:11                  69:10,17 70:17                  72:11 73:2 75:13                  76:24 77:13                  78:12 79:20                  83:24 84:17</p> <p><b>whatever</b> 18:11                  75:9</p> <p><b>whether</b> 38:10                  49:8 51:19 59:9                  62:5 63:13                  68:6,8 86:1</p> <p><b>white</b> 26:9 52:15                  53:18 56:16                  78:16 81:5</p> <p><b>whole</b> 24:24 55:4                  59:2 61:4 73:12</p>	<p>78:9 79:23 87:2</p> <p><b>wide</b> 25:1</p> <p><b>Wildlife</b> 47:15                  70:13</p> <p><b>William</b> 61:23                  68:5</p> <p><b>willing</b> 69:23</p> <p><b>wished</b> 58:14</p> <p><b>wondered</b> 62:2                  68:9 84:12</p> <p><b>wondering</b> 44:25                  61:11 62:4</p> <p><b>work</b> 10:15 20:17                  32:2 37:21,23                  42:15 43:21                  67:15 68:15                  70:13 79:18</p> <p><b>worked</b> 6:5 45:16                  46:17 82:13</p> <p><b>working</b> 6:22 38:2                  39:14 41:16 42:6                  70:10,13 80:19</p> <p><b>works</b> 80:15 82:16</p> <p><b>world</b> 41:21 64:8                  70:3</p> <p><b>worst</b> 61:24 62:2</p> <p><b>writing</b> 4:9,15 8:2                  37:3</p> <hr/> <p style="text-align: center;"><b>Y</b></p> <hr/> <p><b>yards</b> 75:1</p> <p><b>yellow</b> 4:11 87:14</p> <p><b>yesterday</b> 86:25</p> <p><b>yet</b> 35:19 74:24</p> <p><b>yield</b> 32:8</p> <p><b>York</b> 40:2,7</p> <p><b>yours</b> 11:23</p> <p><b>yourself</b> 5:20                  87:17</p> <p><b>yourselves</b> 73:10</p>	<hr/> <p style="text-align: center;"><b>Z</b></p> <hr/> <p><b>Zawadzki</b> 58:15                  69:13</p> <p><b>Z-A-W-A-D-Z-K-I</b>  <b>I</b> 58:16</p> <p><b>zero</b> 30:14 38:4                  39:18</p> <p><b>ZIP</b> 37:13,19 40:1</p> <p><b>zone</b> 26:8,9,23                  34:25 66:9                  67:11,20 78:11</p>
--	---	---	---