

# REILLY NOMINATION

---

## HEARING BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

TO

CONSIDER THE NOMINATION OF DR. JAMES REILLY TO BE DIRECTOR  
OF THE UNITED STATES GEOLOGICAL SURVEY

---

MARCH 6, 2018

---



Printed for the use of the  
Committee on Energy and Natural Resources

Available via the World Wide Web: <http://www.govinfo.gov>

---

U.S. GOVERNMENT PUBLISHING OFFICE

29-768

WASHINGTON : 2019

COMMITTEE ON ENERGY AND NATURAL RESOURCES

LISA MURKOWSKI, Alaska, *Chairman*

JOHN BARRASSO, Wyoming	MARIA CANTWELL, Washington
JAMES E. RISCH, Idaho	RON WYDEN, Oregon
MIKE LEE, Utah	BERNARD SANDERS, Vermont
JEFF FLAKE, Arizona	DEBBIE STABENOW, Michigan
STEVE DAINES, Montana	JOE MANCHIN III, West Virginia
CORY GARDNER, Colorado	MARTIN HEINRICH, New Mexico
LAMAR ALEXANDER, Tennessee	MAZIE K. HIRONO, Hawaii
JOHN HOEVEN, North Dakota	ANGUS S. KING, JR., Maine
BILL CASSIDY, Louisiana	TAMMY DUCKWORTH, Illinois
ROB PORTMAN, Ohio	CATHERINE CORTEZ MASTO, Nevada
SHELLEY MOORE CAPITO, West Virginia	TINA SMITH, Minnesota

BRIAN HUGHES, *Staff Director*

PATRICK J. MCCORMICK III, *Chief Counsel*

ANNIE HOEFLER, *Professional Staff Member*

MARY LOUISE WAGNER, *Democratic Staff Director*

SAM E. FOWLER, *Democratic Chief Counsel*

# CONTENTS

## OPENING STATEMENTS

	Page
Murkowski, Hon. Lisa, Chairman and a U.S. Senator from Alaska .....	1
Cantwell, Hon. Maria, Ranking Member and a U.S. Senator from Wash- ington .....	2
Gardner, Hon. Cory, a U.S. Senator from Colorado .....	3

## WITNESS

Reilly, Dr. James, nominated to be Director of the United States Geological Survey .....	4
---	---

## ALPHABETICAL LISTING AND APPENDIX MATERIAL SUBMITTED

American Association of Petroleum Geologists: Letter for the Record .....	42
Cantwell, Hon. Maria: Opening Statement .....	2
Gardner, Hon. Cory: Opening Statement .....	3
Murkowski, Hon. Lisa: Opening Statement .....	1
Reilly, Dr. James: Opening Statement .....	4
Written Testimony .....	8
Responses to Questions for the Record .....	28



## REILLY NOMINATION

---

TUESDAY, MARCH 6, 2018

U.S. SENATE,  
COMMITTEE ON ENERGY AND NATURAL RESOURCES,  
*Washington, DC.*

The Committee met, pursuant to notice, at 10:05 a.m. in Room SD-366, Dirksen Senate Office Building, Hon. Lisa Murkowski, Chairman of the Committee, presiding.

### OPENING STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

The CHAIRMAN. Good morning, everyone, and welcome. The Committee will come to order as we begin our hearing to consider the nomination of Dr. James Reilly to be Director of the U.S. Geological Survey (USGS).

This is a critical agency. It is tasked with surveying and inventorying our nation's mineral base. It provides real-time data for volcanic eruptions, landslides, earthquakes, and more. It deploys thousands of stream gauges throughout the United States to monitor groundwater and river levels. This critical, objective data helps decision-makers understand how geologic processes impact human life, national security, and vital infrastructure.

I have to tell you Dr. Reilly, when I first heard about your nomination, I thought it was a little bit strange that we were going to be speaking with an astronaut, an astronaut nominated to run the agency that really focuses on rocks, geology, and stuff deep in the earth.

But clearly your background in geosciences and geology, certainly as well as your service to our nation, make you qualified, certainly qualified, to run the Department of the Interior's premier science bureau.

Dr. Reilly began his career researching stable isotope geochronology in Antarctica. He then spent 15 years as a geologist in Texas conducting surveys of oil and gas deposits in the Gulf of Mexico. While working as a geologist in Texas, he spent 22 days on the ocean floor in deep submergence vehicles, testing imaging technology used in deepwater engineering projects.

He then transitioned from below the surface of the ocean, to space. Dr. Reilly has completed three missions to space to help repair the International Space Station, conducting five space walks and spending a total of 856 hours in space, so plenty of time to be thinking about how you are going to manage this agency on Earth here.

Dr. Reilly truly has an impressive resume and it is good to finally have a geologist nominated to run the USGS, someone who can help the Survey re-prioritize its core mandate, which is to be a geological survey. This will not only help restore America's mineral security but also our economic and national security.

Dr. Reilly, I welcome you to the Committee, and I thank you for your willingness to again serve our nation. I hope to move your nomination quickly, reporting you from the Committee as soon as possible.

I also hope to confirm you, along with two other well-qualified Interior nominees, Susan Combs and Ryan Nelson. I hope to confirm all of you as soon as possible.

I would note that Ms. Combs and Mr. Nelson have now been stuck on the Senate calendar for more than five months. We don't want to put you in that position here, but that is far longer than we have seen with many predecessors in the previous Administration. We certainly want to figure out a good way to move those individuals through.

Senator Cantwell, I turn now to your comments and opening statement.

**STATEMENT OF HON. MARIA CANTWELL,  
U.S. SENATOR FROM WASHINGTON**

Senator CANTWELL. Thank you, Madam Chair, and thank you for holding this hearing on Dr. Reilly's nomination for this very, very important position.

Dr. Reilly has been quoted as saying that when he was an astronaut he never looked down on our planet from orbit without being "amazed at how geology has played a significant role in the development of humankind." Thank you for that statement.

Similarly, no institution has played a more significant role in our understanding of geology of our nation than the Geological Survey. The USGS does not just assess the nation's oil and gas and mineral resources, as important as that is, it also conducts natural hazard programs to help understand, prepare for, and respond to volcano eruptions, earthquakes, tsunamis, and landslides.

It was in the Mount St. Helens disaster that we named a monument after David Johnston, the USGS volcanologist who was on duty during that implosion in May 1980.

So they play very important roles for our nation. It monitors, it collects, and it analyzes data about our water resources. The work of USGS, as was said for oil and natural gas development and resource management, plays a very important role for stewardship of our land and water, for better management of water resources, to forewarn and protect communities from national hazards. Let me just say, Washington State has its very large number of active volcanoes, and we are very concerned about earthquakes, the Cascadia Fault, the prevalence of landslides, and even today, different issues related to snowpack. We have had several people already killed this year in avalanches.

So, understanding the new weather patterns and what that means for the vulnerability and holdings of our lands, is very important and to improve our understanding of the nation's resources through very high-quality science.

The Director of the Geological Survey needs to not only have a firm grounding in geological science, but also an understanding of the USGS broad mission and how important it is to work with a variety of diverse communities and use important data. It is a job that requires respect for the dedicated scientists at USGS, a willingness to defend their science and integrity, and a willingness to fight for adequate funding for the agency's important work.

So I welcome you to the Committee. Congratulations on your nomination. I look forward to having a chance to ask questions, dialogue with you, about very important issues before this agency. Thank you.

The CHAIRMAN. Thank you, Senator Cantwell.

Senator Gardner will be introducing Dr. Reilly, but before we begin that I would like to go ahead and swear you in.

The rules of the Committee which apply to all nominees require that they be sworn in in connection with their testimony. So I would ask that you rise and please raise your right hand.

Do you solemnly swear that the testimony you are about to give to the Senate Committee on Energy and Natural Resources shall be the truth, the whole truth, and nothing but the truth?

Dr. REILLY. I will.

The CHAIRMAN. You may go ahead and be seated.

Before you begin your statement, I will ask you three questions addressed to each nominee that appears before the Committee.

Will you be available to appear before this Committee and other Congressional committees to represent departmental positions and respond to the issues of concern to the Congress?

Dr. REILLY. I will, Senator.

The CHAIRMAN. Are you aware of any personal holdings, investments, or interests that could constitute a conflict or create an appearance of such a conflict should you be confirmed and assume the office to which you have been nominated by the President?

Dr. REILLY. There are none, Senator.

The CHAIRMAN. Are you involved or do you have any assets held in blind trusts?

Dr. REILLY. We do not.

The CHAIRMAN. Thank you.

Let's turn to Senator Gardner for your introduction.

#### **STATEMENT OF HON. CORY GARDNER, U.S. SENATOR FROM COLORADO**

Senator GARDNER. Thank you, Chairman Murkowski. I appreciate the opportunity to introduce a fellow Coloradan.

Good morning, Dr. Reilly. Thank you for being here. Thank you for your commitment to public service and for your willingness to serve in this capacity.

I am pleased, obviously, to introduce Dr. Reilly, an avid fisherman from Colorado Springs, and a uniquely qualified candidate to become the next U.S. Geological Survey Director.

Now being in this position doesn't mean you are going to miss the hatch on the Arkansas River this year. Can you go back and do that or—

Dr. REILLY. At your invitation—

Senator GARDNER. Very good, very good.

The USGS, obviously, plays a critical role in our country's science, a critical role in earthquake and hazard monitoring, as has been mentioned here.

We have a group of Colorado Farm Bureau attendees and their elite leadership academy who are here witnessing your testimony today. We talked a little bit, briefly, about them and the role that USGS plays in water, of course, oil and gas, some of the discoveries they have made in Western Colorado, and the significant deposits of natural gas in the Piceance Basin area.

You have dedicated much of your life to our country, serving in the U.S. Navy and 13 years at NASA as a former astronaut. I was wondering if you ever are a former astronaut or you are just always, like a Marine, an astronaut?

You have immense experience in geological research. Dr. Reilly has a deep understanding of the issues at hand.

He also has the management experience necessary to run the USGS. He spent 17 years in the private sector as a manager and exploration geologist and has also served as the Dean of the School of Science and Technology at the American Public University System (APUS) where he oversaw 200 faculty that served more than 50,000 working adults seeking higher education. He also undertook the role of Associate VP of Strategic Relations for STEM programs at APUS. In this role, he oversaw the development of new strategic relationships and programs in the science, technology, engineering, mathematics fields. Also, he is currently serving the Department of Defense leading a team of space operations experts in developing a new education program for joint services and allied personnel, hosted by the U.S. Air Force at the National Security Space Institute in Colorado Springs.

Dr. Reilly is a tremendous nominee and more than qualified for this position, not to mention, it is always great to have someone with Colorado roots and ties serving our fellow Americans.

I look forward to Congress getting to know Dr. Reilly during this Committee hearing and certainly to your confirmation.

Thanks, Dr. Reilly.

The CHAIRMAN. Dr. Reilly.

**STATEMENT OF DR. JAMES REILLY, NOMINATED TO BE  
DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY**

Dr. REILLY. Thank you, Senator. And thank you, Chairman Murkowski, Ranking Member Cantwell and the distinguished members of the Committee. I appreciate it.

Thank you, Senator Gardner, for the gracious introduction and also for your service to our great home state of Colorado and to our nation. We appreciate it.

It is certainly a privilege and an honor to be here before you this morning as President Trump's nominee to serve as the 17th Director of the U.S. Geological Survey. Further, I wouldn't be here today without Secretary Zinke's faith in my capabilities and support for my nomination. I owe them both a great deal of thanks.

I'm fortunate to have with me today my beautiful wife, Allison, who is a science teacher by background, right behind me. Two of my three oldest children are here as well. Trey, who is behind me as well, an employee of NASA at Kennedy Space Center working



on projects that will take us back to the Moon and on to Mars. Jason and his wife, Rebekah, on my right behind me here, who are both first responders in cities in Central Texas. And my third child, who was going to be here this morning, Mary Caitlin, is currently dealing with some medical issues this morning, so she won't be joining us, but she is a resident of DC here and she works as a contractor in support of programs for the Department of Homeland Security. As you might see, public service seems to have become a little bit of a family tradition in our family, and I am immensely proud of their activities.

Also with me today are some close friends. On my right here is Dave Waldrup. We've known each other since high school, so I've known him for almost 50 years, please discount almost anything he says. And Colonel Alvin Drew, who is behind me to my left, an astronaut colleague. He and I are very close friends, and we've known each other for many years as well. Not present today are my two youngest children, Jacob Luke and Anna Mary Rose. They are ages four and two and the reason they're not here is you wouldn't hear a thing I would say if they were present.

[Laughter.]

But as you know, the U.S. Geological Survey was created by the Organic Act of 1879, which provided for the "classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain."

Since its founding, the USGS has maintained a proud tradition as the premier earth science agency delivering unbiased, independent scientific data and findings on critical questions before the nation to the decision-makers in the civil, government, and national defense sectors.

As such, the reputation enjoyed by the USGS is matched only by NASA as being highly regarded by the citizens of our great country. And just like NASA, USGS attracts our nation's best and brightest students, who will be among the future decision-makers in our country.

My history with the USGS began in the early 1970s when I first started my educational path to becoming a geologist. I was, and remain, a consumer of the maps generated by the Bureau and also at a scientific conference in 1976 came upon a display of USGS literature which contained a publication on the first results of something called the Earth Resources Technology Satellite, or ERTS-1, which ultimately became the Landsat Program.

I was fascinated in seeing imagery of the geology and ecology of our planet at scales that were impossible to achieve previously. In fact, I was so enamored with the capabilities of the ERTS mission that I camped out at the table at the end of the conference to lay claim to that volume. I still have it to this day and it serves as a useful reminder of how revolutionary the ability to see things in new ways is and can be in science.

The Landsat Program is now looking to launch Landsat 9 in the series and considering the concepts of what the Landsat 10 mission architecture might look like. If confirmed, I look forward to working with the team on that development.

Today the USGS core missions are focused within the Energy and Mineral Resources and Environmental Health Programs, Eco-

systems Programs, Land Resources, Natural Hazards, Water Resources, and Core Science Systems.

In my career, I have been fortunate to have worked or lived in regions where most of these mission areas are critical. As Senator Gardner can attest, that western water in our home states is of great critical interest and it is one of the resources that we are having to manage very tightly.

My dissertation further went on to build on the understanding of how regulatory or protection of unique marine ecosystems and how they interrelate with the geology of the continental slope interact, one of the core pieces of the missions within the USGS, of course, within the ecosystems piece.

I have explored for and produced critical minerals required to build the technologies to drive our economic future, experienced natural cataclysmic effects where information from Landsat and the 3D elevation program, as examples, could mitigate the impacts and have spent almost three decades working in systems engineering for space systems applications.

I've also been lucky enough to be counted with Alvin, Neal, Buzz and all the other explorers, who have gone to the frontiers of our knowledge and even pushed it just a little further out.

Managing an organization as large and diverse as the USGS I can expect can be a challenge. I have found, however, in my management roles in the private, academic, government and military sectors, that highly competent, motivated people generally require little direct supervision from the top and I expect that would be the case, generally, at the USGS.

I've found a simple concept utilized by Colonel Terry Wilcutt, the commander of my first mission, works very well both in smaller organizations with small teams and in larger organizations where the teams might consist of tens to hundreds of people. After our flight, I looked at how he managed the team required to meet our mission objectives and while he never referred to it in this way, he used what we call the Three Question Management theory. In short, he defined the roles and expectations then asked the following three questions to track progress and that was just: Do you have a plan? Is it working? And are you ahead or behind? He depended on our integrity to get the job done, trusted us to communicate problems or issues, and provided a clear communications and planning pathway, both vertically between the mission elements and horizontally across the different elements within the organization itself. If confirmed for this position, I would certainly strive to follow these same principles.

Finally, it has been my experience that good science is absolutely critical to the development of good policy. USGS is known for the quality and integrity of the scientific work carried out by the approximately 8,000 personnel supporting the Bureau.

If confirmed this will be one of my utmost priorities in supporting the efforts of our people to deliver the critical science to our nation.

I thank you sincerely for this opportunity. Should I be confirmed, I look forward to working with each and every one of you and your offices to help serve the American people, and I stand ready to answer your questions.

Thank you, Senator.  
[The prepared statement of Dr. Reilly follows:]

PREPARED STATEMENT OF JAMES F. REILLY, II, PHD  
NOMINEE FOR  
DIRECTOR, U.S. GEOLOGICAL SURVEY  
U.S. DEPARTMENT OF THE INTERIOR  
BEFORE THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE  
MARCH 6, 2018

Thank you Chairman Murkowski, Ranking Member Cantwell, and the distinguished members of the Committee. Thank you, also, Senator Gardner for your gracious introduction and your service to our great home State of Colorado and the Nation.

It is certainly a privilege and my honor to be here before you this morning as President Trump's nominee to serve as the 17<sup>th</sup> Director of the U.S. Geological Survey. Further, I wouldn't be here today without Secretary Zinke's faith in my capabilities and support for my nomination. I owe them both a great deal of thanks.

I'm fortunate to have with me today my beautiful wife, Allison, a teacher by profession, my three oldest children, Trey who is an employee of NASA at Kennedy Space Center working on projects to take us back to the Moon and on to Mars, Jason and his wife Rebekah both of whom work as first responders for cities in Central Texas, and Mary Caitlin who is a resident of DC and works as a contractor in support of programs in the Department of Homeland Security. As you can see, public service has become somewhat of a family tradition and I am immensely proud of them. Also joining us today is JoAnn Reilly, mother of Trey, Jason, and Caitlin who works for the Department of Defense here in DC. Close friends Dave Waldrup, who I've known for almost 50 years, Alvin Drew, an astronaut colleague and close friend of many years, and Janet Edwards, wife of Joe Edwards, another astronaut colleague, classmate, and close friends. Not present today are my two youngest children, Jacob Luke and Anna Mary Rose, ages 4 and 2.

As you know, the U.S. Geological Survey was created by the Organic Act of 1879, which provided for the "classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain." Since its founding, the USGS has maintained a proud tradition as the premier earth science agency delivering unbiased, independent scientific data and findings on critical questions before the Nation to the decision makers in the civil, government, and national defense sectors. As such, the reputation enjoyed by the USGS is matched only by NASA as being highly regarded by the citizens of our great country. Just like NASA, USGS attracts our nation's best and brightest students who will be among the future decision-makers in our society.

My history with the USGS began in the early 1970s when I started my educational path to becoming a geologist. I was, and remain, a consumer of the maps generated by the Bureau but

also at a scientific conference in 1976 came upon a display of USGS literature which contained a publication on the first results of the Earth Resources Technology Satellite (ERTS), which ultimately became the LANDSAT Program. I was fascinated in seeing imagery of the geology and ecology of our planet at scales that were impossible to achieve previously. I was so enamored with the capabilities of the ERTS mission that I camped out at the table at the end of the conference to lay claim to that volume. I still have it to this day and it serves as a reminder of how revolutionary the ability to see things in new ways can be in science. The LANDSAT Program is now looking to launch LANDSAT 9 and considering the concepts of what the LANDSAT 10 mission architecture might look like. If confirmed, I look forward to working with the teams on that development.

Today the USGS core mission areas are focused within Energy and Minerals Resources and Environmental Health Programs, Ecosystems Programs, Land Resources, Natural Hazards, Water Resources, and Core Science Systems. In my career I have been fortunate to have worked or lived in regions where most of these mission areas are critical. As Senator Gardner and many other Senators on this panel will attest, western water in our home states is of great regulatory interest as a critical resource. My dissertation built on the understanding and protection of unique marine ecosystems and how they interrelate with the geology of the continental slope. I have explored for and produced critical minerals required to build the technologies to drive our economic future, experienced natural cataclysmic effects where information from LANDSAT and 3DEP, as examples, could mitigate impacts, and have spent almost three decades working in systems engineering for space systems applications. I've also been lucky enough to be counted with Alvin, Joe, Neal, Buzz, and all the other explorers who have gone to the frontiers of our knowledge and even pushed it just a little further.

Managing an organization as large and diverse as the USGS I expect can be a challenge. I have found, however, in my management roles in the private, academic, government and military sectors, that highly competent, motivated people require little direct supervision from the top, and I expect that would be the case at the USGS. I've found a simple concept utilized by Col. Terry Wilcutt, the commander of my first mission, works very well both in smaller organizations with small teams and in larger organizations where the teams might consist of tens to hundreds of people. After our flight I looked at how he managed the team required to meet our mission objectives and, while he never referred to it in this way, he used Three Question Management. In short, he defined roles and expectations then asked the following three questions to track progress: do you have a plan, is it working, and are you ahead or behind? He depended on our integrity to get the job done, trusted us to communicate problems or issues, and provided a clear communications and planning pathway, both vertically between the teams and management, and across organizations required to meet our mission plans. I see the primary roles of the Director as being very similar to Terry's with the added responsibility of planning and executing the budget. If confirmed for this position, I would strive to follow these principles.

Finally, it has been my experience that good science is absolutely critical to the development of good policy. USGS is known for the quality and integrity of the scientific work carried out by the

approximately 8000 personnel supporting the Bureau. If confirmed this will be one of my utmost priorities in supporting the efforts of our people to deliver the critical science to our Nation.

I thank you sincerely for the opportunity. Should I be confirmed, I look forward to working with each of you and your offices to help serve the American people. I stand ready to answer any questions you may have.

The CHAIRMAN. Thank you, Dr. Reilly. We appreciate your willingness to serve and that of your family to stand behind and support you. Welcome to all of them and to your friends. You have a good support system it looks like, so we are pleased that they are with you here today.

I appreciate you mentioning the scientific integrity of the agency. I think USGS, we know, is known for its focus on seeking out the best science, the best data and doing so in a way that is not biased and that we can certainly look to. My hope is that you maintain that integrity within the agency.

You mentioned your three-question approach. Do you have a plan? Is it working? And can you do it? Easy question for you, hopefully, this morning. With the USGS as it is structured today, do you feel that the agency is working as it needs to be?

I have suggested that sometimes I think the USGS may have strayed from its core mission in recognizing the original mandate as authorized under the Organic Act. Do you feel that the agency is tracking right? If not, where do we need to adjust? Are there redundancies or duplications with other agencies? Give me your view in one minute or less.

[Laughter.]

Dr. REILLY. Thank you, Senator. I always like a challenge.

The CHAIRMAN. Yes.

Dr. REILLY. The—unfortunately, I can't really give you a good detailed answer for the question on where I think things might have strayed, but one of the things I will be doing, if confirmed, is I'll spend the first, certainly the first 30 days at the very least, talking with all the senior managers within the core mission areas and trying to evaluate how well they align with the Organic Act of 1879 because that is, as you point out, a very clear mission statement for the USGS. And we'll be looking very closely at that.

And of course, I'd be happy to work with you and your staff on realigning it in anything that you might see being an issue where we would need some focus.

The CHAIRMAN. Good, I appreciate that.

I have directed a lot of my attention here on the Committee over these past several years focused on mineral security and recognizing that we are going in a direction, in terms of reliance on other nations, for some pretty key, critical minerals that are important to our national defense and to our economy.

Last year, here in the United States, we imported 100 percent of 21 different minerals and at least 50 percent of another 30. This reliance on other nations concerns me. I hope it concerns you. We are looking to lessen that dependence.

The President and the Secretary recently signed an Executive and a Secretarial Order to strengthen our mineral security. I think that that is a step in the right direction, but I also recognize that that is an Executive Order. It is a Secretarial Order. I would like to do more from the legislative and the statutory authority.

So the general question to you, again, is when it comes to understanding what it is that we have, understanding what it is that we lack, how do you view this within the responsibilities of the agencies? Do you think we need more statutory authority to address this level of dependency that currently exists?

Dr. REILLY. Yes, Senator.

The critical minerals question that is before the USGS today is obviously one that we need to focus on from a technical aspect, and it certainly fits within the Organic Act mission statement that we talked about.

Identifying what those issues are inside the organization, particularly when it gets to statutory authorities, that of course, one I can't really answer today, but what I would certainly like to do is be to review that with you when I get a chance to put my feet on the ground there for a while and take a good hard look at what we've got and what, of course, I always like to be able to come back to you with a much more detailed answer on that one.

The CHAIRMAN. Do you share my concern, though, about the dependency that we have on foreign sources?

Dr. REILLY. Yes, yes, ma'am.

In fact, some of the things I'm more familiar with from the satellite operations sides of things, you know, gallium which is critical to getting the solar arrays that work efficiently in space is one of those critical minerals, just as one example.

And as you point out, there's literally dozens of these elements, the critical minerals, which include the rare earth elements, that are absolutely critical to build the new technologies that we need here in our own country. Being less dependent on that would be a strategic vulnerability, absolutely share your concern.

The CHAIRMAN. Very good, I look forward to working with you on that.

Dr. REILLY. Thank you.

The CHAIRMAN. Senator Cantwell.

Senator CANTWELL. Thank you, Madam Chair.

Dr. Reilly, as Director of USGS you will be asked to walk a line of being a political appointee in an agency that is based on science, and you will be tasked with maintaining the importance of scientific integrity and I appreciate your statement.

A recent example involving the challenges, though, of scientific integrity was the resource assessment report of the petroleum reserve in Alaska. The news reports have made it clear that the current Administration was interested in obtaining sensitive data on the petroleum reserve prior to what is allowed by the Interior Scientific Integrity Policy, and several scientists resigned in protest.

So the question is how will you at USGS be tasked with developing these many reports and also making sure that we are capturing sensitive information but also keeping the scientific integrity of the agency in place as to the rules and process?

Dr. REILLY. Thank you, Senator.

I'll deal with that last question first, if I may.

Senator CANTWELL. Yes.

Dr. REILLY. The scientific integrity has got to be a key element of the USGS because they are, as you mentioned, it's an independent organization that is designed to deliver unbiased science to the decision-makers, to you, for example. And that will be one of the highest priorities that I'll have as the Director.

The second piece which is about the resignations of staffers that were working within the USGS regarding a report that had been requested from the leadership of the Department of the Interior.



I'm not certain of all the details there. I can only offer a qualified opinion on it and that would be based on my experience in my other occupations up to this point, I always felt like I had a responsibility to deliver information to my leadership, particularly if it had an impact on how the leadership was supposed to respond to it, particularly on something that might, indeed, be sensitive with the understanding that the leadership would hold that as tight as I would, in terms of it being protected information. And so, I would make sure that that communication goes vertically in both directions. If we ever felt like somebody would, could, come to me and tell me that they were in a position where they were uncomfortable with that, then we would, of course, deal with that specific example at the time and hopefully wouldn't get into the situation that occurred here. And again, I don't have the complete details on what happened, but that's my best assessment.

Senator CANTWELL. But you plan to use your ability to protect scientific information from political influence, undue political influence?

Dr. REILLY. Yes, ma'am.

If somebody were to come to me and say, I want you to change this because it's the politically right thing to do, I would politely decline.

Senator CANTWELL. Okay.

What about the budget issues? I think that the FY2019 budget is a 20 percent cut and proposed is cutting the scientific workforce by 15 percent, eliminating over 1,200 positions. That is a pretty significant cut.

How will you make sure that you are meeting the scientific integrity and the information that we need to understand these issues as it relates to the planet and the Earth, particularly, but we are working with in these various aspects that USGS covers?

Dr. REILLY. Yeah, good question, Senator.

The best way I can answer that here without really having a lot of the information that I would like to have at my fingertips would—the first thing I would do when I get there is I'm going to spend, as I mentioned earlier, the first 30 days, really, just talking to everybody within the mission areas and then finding out where are the places that we can cut without seeing any significant impacts as far as meeting the budget challenges.

The second piece is looking where can we go crossways across different organizations where we already contribute and then look for where we can find savings, potentially, there before we have to get into actually making significant cuts in any of the programs.

Senator CANTWELL. So the question is, again, you believe in the integrity of science and protecting and having the adequate resources to make sure that the scientific information is there for policymakers and others to make decisions on?

Dr. REILLY. Yes, Senator.

I'm fully committed to the scientific integrity. Science drives good policy, and good science has to be there for good policy to be made.

Senator CANTWELL. Well, I appreciate that.

I can just tell you we have so many complex issues in the Northwest, so many, so many, so many, from salmon to water writ large,

to—but I guarantee you, it is science that we have gotten around the table on, not because we agree, guarantee you.

There are a lot of issues that a lot of people don't agree on in my state, but they come to the table around science and that has helped us every single time.

Thank you for your willingness to serve.

Dr. REILLY. Absolutely, Senator, and I look forward to working with you and your staff.

Senator CANTWELL. Thank you.

Dr. REILLY. Thank you.

The CHAIRMAN. Thank you, Senator Cantwell.

Senator Capito.

Senator CAPITO. Thank you.

Thank you, Dr. Reilly, for your willingness to serve and your really stellar service to the nation.

I am not sure if you are aware of this or not, but there is a partnership, a historic partnership, between West Virginia and the USGS in the form of the Leetown Science Center in Kearneysville, West Virginia. Leetown has played an important function providing ecological research for the Department of the Interior and other federal agencies. There is quite a bit of partnership going on there. Most of the research, I believe, is in aquatic life.

I don't know if you have looked at this, in terms of stream ecology, but what is your view of the USGS' role in helping fisheries and science research to help maintain and sustain, not just our nation's fish for consumption, but also for sport fishing, et cetera?

Dr. REILLY. Thanks for the question, Senator.

I'm not exactly, not too familiar, with the specifics of the science center that you mention.

Senator CAPITO. Right.

Dr. REILLY. But one of the key things and one of the key mission areas within the USGS, of course, is the ecosystems piece and that would, of course, fit right into that.

Senator CAPITO. Right.

Dr. REILLY. So again, I'd have to just declare my ignorance on some of it at this point, but one of the things that I would certainly be ready and willing to do, particularly for folks in West Virginia, would be to come visit and work with you and your staff on those issues.

Senator CAPITO. That sounds great. We would love to have you visit there after your confirmation. That would be terrific.

I guess, again, getting back to our State of West Virginia, one of the more visible ways that the USGS has, I think, provided a great resource for us is in the hydrological research and analysis for floods and flash floods.

In our state, our floods, they rise very quickly. We had a very tragic flood in June 2016 that took quite a few lives. I would like to hear some perspectives from you on the important role this plays in emergency services for the ability for people to protect their property but also to protect themselves in terms of being able to understand the predictability of flash flood or something in a mountainous region such as ours.

Dr. REILLY. Yes, Senator.

We, of course, in Colorado we see the same sorts of things.

Senator CAPITO. Right.

Dr. REILLY. But in terms of the top three priorities, hazards mitigation and identification, and identification of the conditions that lead to the hazards would, of course, be one of the things that I would be very tightly focused on for exactly that reason. It's a benefit directly to the people of our country.

Senator CAPITO. Well, my understanding is that the stream gauges were/are critical in terms of being able to predict those floods and that the last two Presidential budgets have exhibited severe cuts in these areas which I would recommend against and would be in favor of restoring because of how quickly we can get very detailed information that is very good in hazard mitigation.

Dr. REILLY. Yes, Senator.

And I would be happy to work with you directly on that, once confirmed.

Senator CAPITO. Great.

Dr. REILLY. Absolutely.

Senator CAPITO. Let me ask you just, kind of, an offshoot question here.

Broadband deployment is something that is exceedingly important to those of us in rural areas, and it is woefully underdeveloped and really creating a digital divide between urban and rural areas.

I am wondering with the mapping, and I know you don't map broadband services and all those kinds of things, but is there any interplay between USGS and would you see any interplay between USGS and further deployment of technologies such as that into areas all around the country or am I off on a wrong tangent there?

Dr. REILLY. I can't really say at this point, Senator, but one of the obvious things that the USGS does is almost everything is an RF communications link as far as the sensors go, in many ways or in many cases, particularly in mountainous terrains. So if being able to map that distribution would be one aspect that may play into that and that would be one that would, of course, cross from USGS to FCC or some other agency. And of course, we'd be in a supporting role in that case.

Senator CAPITO. Well, good.

Well, I would look forward to working with you on something like that. I think it is going to take an all-hands-on-deck approach to get to that final mile, that final house, that final business and I would look forward to that.

Thank you very much.

Dr. REILLY. Thank you, Senator. I look forward to working with you.

Senator CAPITO. Thank you.

The CHAIRMAN. Thank you, Senator Capito.

Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you.

Dr. Reilly, welcome.

Dr. REILLY. Thank you.

Senator CORTEZ MASTO. Thank you for your willingness to serve. Welcome to your family. Welcome to your best friend, I think.

[Laughter.]

But listen, I am so appreciative that you are here.

I do want to echo what I have heard from my colleagues, particularly when it comes to the budget that the President has introduced. It has increased funding for mineral and energy resources, increasing it to \$84.1 million up from \$73.1 million, and there is the new initiative on 3D mapping. But it also reduces, among the deductions and there is more than 30 percent of them, it reduces funding for areas that are an important focus for many of us, like the echo system, water resources, core science systems, natural hazards, and climate science investments.

Let me just give you an example. In Nevada, specifically, the USGS is a great partner of ours and they do monitoring and data collection across the State of Nevada: monitoring and measuring of earthquake swarms in Reno, operation of the Nevada Water Science Center which collects data on current stream upflow conditions, groundwater and surface water data and water quality, developing science used by other agencies and sage grouse habitat planning, developing science that identified presence of lithium within the state and funding climate change research in the Great Basin by monitoring the pika which is a small, rabbit-like mammal. I tell you that because, like many of my colleagues, we have great partnerships and things going on and the concern with this budget is the cutbacks and the impact it is going to have.

My question to you, and I understand you want 30 days to get in there and kind of assess and prioritize where you're going to be able to work, but do you think there would be any ripple effects or side effects for researchers from other institutions to not be able to work with the USGS scientists and the data they produce if these funding changes were to go into effect?

Dr. REILLY. Yeah, thank you, Senator.

The subject that you mentioned, in terms of the impedance of other organizations to be able to carry forward on their roles and responsibilities, that's a good question. I don't have a good answer for you, unfortunately. But as you point out, in 30 days when I hit the ground, I would be very happy to loop back with you and get you a better answer on that one particularly.

Senator CORTEZ MASTO. Thank you.

Dr. REILLY. But one thing I did take note of in your question was the amount of effort that the USGS performs in the great State of Nevada and that one of the things you mentioned was the lithium which is, of course, another one of the critical minerals that we have to deal with and it's certainly on that list. And we absolutely have to have that to be able to do what we want to do on advanced electronics.

Senator CORTEZ MASTO. Right.

Dr. REILLY. So, of course, we'll be looking at that very seriously.

As far as the budget goes, I've only had a chance to read through the budget justifications, so I don't have a lot of the details on what it really means in terms of the realignments where some of the things have been moved from one place to another.

But as you mentioned, in the first 30 days that's going to be one of the things that I want to ask of the staff and the professionals there and the rest and how does this fit? What does it mean to us? Where are we sensitive? What are the things that we need to be

discussing more with the Secretary in terms of the budget? And of course, I'll be doing that on, almost, a daily basis.

Senator CORTEZ MASTO. Great.

Can I get a commitment from you that, once appointed and after you have done your analysis, if there is going to be an impact to Nevada, you will be willing to reach out and work with us and talk with us about the issues?

Dr. REILLY. Senator, I'll make that commitment right now.

Senator CORTEZ MASTO. Good, and welcome to Nevada. You are welcome any time.

[Laughter.]

Dr. REILLY. I'll be happy to join you there. Thank you very much.

Senator CORTEZ MASTO. And as you well know, USGS has well over 200 programs, offices, laboratories, field stations and different facilities across the country with numerous partnerships with universities and other educational institutions. Can you share your thoughts on the important role these partnerships have with work and products created by USGS?

Dr. REILLY. Yeah, I can give you a first-person perspective on at least the university partnerships. That gives students the opportunity to do real world science and work within the realm of where they are likely to end up. So it gives them a proving ground in many ways. It gives us the opportunity to get a fresh set of eyes, if nothing else, looking at problems that many of us are probably too close to quite often. So we get an opportunity to bring them in.

So, university partnerships are really a good strategic resource for almost anybody. That was one, in the academic world, I fostered quite extensively with the STEM programs is pushing students out into the industry and also into government so that they could do the things that they were interested in and do it with the people that were doing it there and get the perspective.

Senator CORTEZ MASTO. Right.

Dr. REILLY. So, absolutely.

In fact, I'm very passionate about education in terms of the STEM activities and would certainly be a very strong supporter of that.

Senator CORTEZ MASTO. Great. That is great to hear.

I notice my time is almost up.

Thank you, I appreciate you being here and welcome to everyone.

Dr. REILLY. Thank you, Senator.

The CHAIRMAN. Thank you, Senator.

Senator Cassidy.

Senator CASSIDY. Hey, sir.

Dr. REILLY. How are you, sir?

Senator CASSIDY. I am good. How are you?

Dr. REILLY. Good.

Senator CASSIDY. I am intrigued by your Ph.D. thesis.

Dr. REILLY. Yes, sir.

Senator CASSIDY. You know, I used to go to the beach in the Florida Panhandle when I was a kid and there would be tar balls. Now, I was told it was natural seepage that was releasing that, although it could have been a boat just being environmentally not good.

But your research says that you can actually decide looking at the microorganisms at the sea floor, as to whether or not it is seepage or whether it is hazardous discharge. Fair statement?

Dr. REILLY. Yes, sir.

Actually we can see that from space, interestingly enough. We can document where seepage is occurring naturally and whether it's a short-term event or whether it's a continuous event.

Senator CASSIDY. So, if we are to speak about that now we know that there are all kinds of seepage because, I guess, from Texas through Mobile there is so much naturally occurring gas. Similarly, can you see from outer space, kind of marrying your two interests, yes?

Dr. REILLY. Yes, sir.

Senator CASSIDY. That there is seepage along that Florida Panhandle down the Atlantic, the Gulf Coast of Florida?

Dr. REILLY. Yes, sir.

In fact, pretty much anywhere in the world where we have a significant amount of sediments with organic material, and you'll find some form of hydrocarbon seepage associated with that.

Senator CASSIDY. I was once told that in South Louisiana, I believe this to be the case, we have a very high rate of relative sea level rise because we are taking out water, gas, and oil from beneath the ground and so that when support of that oil, gas, and water is removed, the ground recedes. So a little bit of sea level, but a lot of subsidence.

I say that to set up this next question. I was once told that the more you extract, the less seepage you will have because you are just decompressing the ground. Now it might be there is so much under there in the Gulf of Mexico that you cannot decompress enough, but just your thoughts on that?

Dr. REILLY. Yes, sir.

And I'll just revert back to my days as an exploration geologist that we're really looking for economic reserves which means there has to be a fairly large concentration within a relatively small area. And those are the areas that you would be pulling the oil and gas out now just about as fast as you pull it out in most of the reservoirs, you're filling it with water. So, the hydrodynamics will remain about the same, yeah.

Senator CASSIDY. That is in the Gulf of Mexico, not on land?

Dr. REILLY. It's in both, actually.

Usually, you're below the water table at the depths that you'd be producing oil and gas.

Senator CASSIDY. So then my understanding of South Louisiana, is that our subsidence is related to extraction. What you are telling me is that unless it is a pretty high up aquifer, if it is oil and gas, that it is being filled with sea water that comes in.

Dr. REILLY. Actually, I'm not trying to make it quite that restrictive, but what is happening in Louisiana is something that happens in many of the areas where you have a lot of immature clays and the clays are very wet. As the system subsides, what's really happening is as the clay is compressed you're driving the water out. And that water then leaves, the volume drops. It can drop as much as somewhere between 20 and 40 percent depending on the clay mineralogy that you're dealing with. And as such, things have

to go down and that's what's happening along the coastline in Louisiana.

Senator CASSIDY. That certainly leads me to my next question. I think I know, I may overstate this a little bit, Grand Isle has subsided nine feet in relative sea level rise and that is a barrier island that protects us from storms.

USGS will be involved with the dead zone predicting the amount of fertilizer spilling into the Mississippi watershed. I gather you all coordinate with NOAA and then they predict how large that dead zone is. That is important because we would like to use some of that Mississippi River water in diversions, but I am told the more nutrients, the more problematic it becomes, et cetera. You see where I am going with that.

Dr. REILLY. Yes, sir, absolutely.

In fact, part of the question that led to your bringing it up is the interrelationship between all the systems and that's really what we need to find out about how the ecosystems operate. And that would be just one, that would be one aspect of it in terms of how that dead zone is developed, how extensive it is, what are the driving factors being able to move the water around out of the Mississippi would be one of the solutions to the subsidence issue and that we've basically kept it channeled either down through Morgan City through the Chalmette or down through the Mississippi delta. And as a consequence, it hasn't moved around. And that's one of the issues that, of course, USGS is looking at in terms of subsidence and water levels and particularly, how it's impacted with major storms.

Senator CASSIDY. I think what I have heard from you is that, what my understanding is that, a lot of our subsidence is rather from the levying of the Mississippi River where we no longer distribute sediment rich river water to rebuild our coastline as opposed to other factors. Is that again your understanding?

Dr. REILLY. That's just a piece of it, sir.

That's a very, as you might expect and probably understand more than I in many ways, but it's a very complex relationship. And one of the things that the folks at the USGS are focusing on that part of our nation will, of course, be the best to answer that question.

The part I was referring to is really my experience and attempting to answer the specifics of the questions as much as I could. But of course, to be able to fully answer what could we do in terms of the existing conditions and the impacts and mitigation, of course, that's one of the things I'd want to go talk to the folks that are, the experts in it at the USGS. I can get back to you.

Senator CASSIDY. Well, I look forward to having that conversation with you and them in the future.

Thank you very much.

Dr. REILLY. Yes, sir, I look forward to it.

Senator CASSIDY. I yield back.

Dr. REILLY. Thank you, Senator.

The CHAIRMAN. Thank you, Senator Cassidy.

Senator Smith.

Senator SMITH. Thank you, Madam Chair and welcome, Dr. Reilly. It is wonderful to have a chance to hear from you and thank

you so much for your service and for your willingness to continue to serve.

Dr. REILLY. Thanks, Senator.

Senator SMITH. We say in Minnesota that everyone is entitled to their own opinion but not entitled to their own facts. I am glad to hear your stated commitment to protecting the scientific integrity of this organization that you want to serve and making sure that you are an honest provider of good information. Thank you very much for that.

I would like to just ask you about a couple of issues that are important to Minnesota, where I am from. As you know, we are the Land of 10,000 Lakes. It is actually close to 12,000. We are very concerned in Minnesota about aquatic invasive species. In Minnesota, our surface water is important to our heritage, outdoor recreation, and also our economy. We have serious problems, as I am sure you know, with Asian carp and zebra mussels and other invasive aquatic species. The USGS has, of course, been on the forefront of working with us on research methods to track the progress of these invasive species like Asian carp and also helping us to figure out what kind of innovative management practices we want to adopt that can slow that spread. I wanted to just ask you for your assessment, your thoughts on this work and how you see it fitting into the mission of the USGS?

Dr. REILLY. Yes, ma'am. Thank you for the question.

Especially when it comes to an invasive species, that's a critical factor for a lot of our states. We have that happening in multiple places.

So, of course, that would be one of the focus areas, certainly within the ecosystems piece of the USGS. That looks like it would also be one where we would have supporting and supported relationships with other agencies, Fish and Wildlife, for example. Of course, that would be one of the first things we'd be wanting to look at would be how can we help and how can they help us meet some of the questions that you've just posed.

And of course, again, I don't have a lot of detail on the information because I'm not there yet, but I would certainly be happy to loop back with you and give you a more detailed answer after I get a chance to be on the ground for a little while.

Senator SMITH. Thank you very much.

As my colleagues have suggested, we are all concerned about the impact of these budget cuts on the ability of the agency to work in partnership with Fish and Wildlife and other agencies to do work around aquatic invasive species. Can you just talk a little bit about how you see that and your commitment to protecting that part of your work?

Dr. REILLY. Yes, the first thing that immediately comes to mind would be first, scoping the problem, figuring out what resources are required. And of course, that would be dependent on the professionals there at the USGS to inform me on that.

And then would be to get some more feedback, particularly coming to your office, for example, working with your staff and finding out what is it that are the requirements within your state, tie that in with the other states and then try to come back with a much better and more integrated answer on how we can do that and



whether the budget that we are looking at for Fiscal Year '19 meets the requirements that we would have.

And of course, if we had any questions or problems we'd certainly bring that to your attention.

Senator SMITH. Very good.

Well, I appreciate that, and I look forward to working with you on that.

I want to just ask one other question related to water also though, you know, in Minnesota we have so much water, we also are looking at real important shifts in our aquifers and our water that is underground.

Of course, USGS does so much in terms of geologic mapping that is important to this work. The mapping that is done is so important for us to learn about what is happening with our water resources is the aquifers are being drawn down more and more.

And I guess, I am understanding this research is funded at the USGS through the National Cooperative Geologic Mapping Program. I don't know if you have had a chance to look into this much yet, but I would love to hear your thoughts on the importance of that strategy, that program.

Dr. REILLY. Yes, Senator, I can answer at least one piece of that.

Obviously, the mapping is one of the core obligations or core charges for the USGS so we would certainly want to make sure we're still meeting the requirements of the people in our nation in terms of what they need.

Aquifers and as I mentioned, as Senator Gardner mentioned and I will certainly echo, water is a critical resource in many of our states, particularly the West. In fact, if you have any extra from Minnesota, we'd love to get it.

[Laughter.]

But in terms of being one of the core missionaries for the USGS, water is obviously a very large one. And of course, we would like to loop back with you, particularly on this one, find out what your concerns are, address those concerns, specifically, and see if there are any holes in what we're doing and certainly look for your feedback from your staff.

Senator SMITH. Well, great.

Dr. REILLY. Particularly on that one.

Senator SMITH. Thank you very much, I appreciate it.

Dr. REILLY. Yes, ma'am. Thank you.

The CHAIRMAN. Thank you, Senator Smith.

Senator Manchin.

Senator MANCHIN. Thank you, Madam Chairman, and thank you, Dr. Reilly, and for your family and your friends who are here supporting you, we welcome them. Thank you for your service and also your willingness to continue to serve.

Dr. REILLY. Thank you, sir.

Senator MANCHIN. It is hard sometimes to find good recruits. You seem to be the best of the best.

My colleague, Senator Capito, from West Virginia was talking to you about Leetown, and it is very important to us. Rather than go through that again, knowing that she and I work in a very bipartisan way, we will ask you to come just one time, we will make one

visit do because everybody else wants you to visit also. We want to make sure that you go to Nevada and to Minnesota.

I am glad to see the lakes are growing, from 10,000 to 12,000. It looks like we are going strong. That is always a good sign.

[Laughter.]

And all these good things.

We would all love to have you in our states, you know that.

Dr. REILLY. Yes, sir.

Senator MANCHIN. In 2004 Josh Bolton, well no, let me go here first, the issue to discuss is the Committee's expansion of energy infrastructure.

The State of West Virginia is a major producer of energy, and we support the rest of the country strongly. Gas pipelines are delivering natural gas to our end users and it is apparent that we need to have natural gas given the constraints issue we saw during the recent bomb cyclone as well as the Russian tanker and LNG arriving in Boston during the same cold snap. Unbelievable with all the energy we have in our state that we had to bring in resources from Russia. I cannot believe it.

We sit on top of the most promising shale plays in the world and we are producing more and we just had another one come in which is the biggest in the world.

I would like to applaud the Administration's commitment to domestic producing energy, especially in the gas arena.

If you could, tell me more about the work the USGS does to support permitting agencies. That seems to be the biggest problem. We sure don't want to invite any type of environmental calamity there, but permitting pipelines as well to ensure the pipeline safety to prevent landslide hazards and subsidence. And do you see improvements in coordination among the agencies, including yours, with the process in sharing or timelier that can either accelerate very much, the permits?

Dr. REILLY. Yes, Senator.

From my experience in not so much the USGS, of course, but certainly elsewhere, there's always room for improvement in almost anything we do.

One of the questions you raise is identifying the hazards and the information that would be required to be delivered to the permitting agencies so that they can make a safe assessment of what has to happen because obviously, one of the core areas of the USGS and that of course, be hazards mitigation, as we mentioned earlier, would be one of the things we'd focus on very tightly because it's one of the things that has a direct and immediate response or immediate impact on how we conduct our business here in the country, but it's also for the safety of our people in the nation. So, that would remain one of the top priorities for the USGS.

Senator MANCHIN. Let me go to rare earth for a minute, rare earth minerals.

China seems to have the world market pretty much dominated. We don't even mine any rare earth minerals, but we use more than any other country on Earth on a daily basis. Are you concerned about that and what can we do to resurrect that so that we can produce, at least for strategic purposes and for the security of our

nation, do more? I say that because we mine a lot of coal in West Virginia, as you know.

Dr. REILLY. Yes, sir.

Senator MANCHIN. We found out through these coal seams and the research at WVU that we have a lot of rare earth minerals within our coal finds that we could be extracting to give our country the supplies, hopefully, that it would need and strategically keep ourselves in a very strong position. How do you feel about that coming from your scientific background?

Dr. REILLY. Yes, sir.

Actually, one of the critical things about the critical minerals is how much of them, where are they and are they economically producible, obviously?

You know, I'm not a hard minerals background for the most part, but looking at what we have on that list and looking at what we need and where we're having to buy it, what you point out is a good point and that is it's a strategic vulnerability. If somebody were to shut it off we would have a—

Senator MANCHIN. I mean, that is the thing I have a hard time understanding.

We keep talking about cost. We know that we can't compete when China is dumping the way they dump in so many arenas, but from someone has got to make a decision on what we need to have a strategic inventory of, supply of, so that we are not held hostage because cost is immaterial if we need something and you can't get it and they shut us down.

Dr. REILLY. Yes, sir.

And what you point on there is a role of the USGS in the 1879 Organic Act is really to characterize what we have and where we have it. That would obviously be part of the answer that you'd be seeking.

Then there's a second piece, of course, is the policy part and that's—

Senator MANCHIN. We used to have stockpiles of rare earth minerals. We used to stockpile around the country. We had tremendous stockpiles throughout West Virginia. They have all been depleted, done away with. We were hoping that you can, kind of, put your scientific touch to this and get us back in the right direction and we can protect ourselves.

Dr. REILLY. I'll be happy to jump on that, Senator.

[Laughter.]

That seems like—

Senator MANCHIN. Thank you, Doctor, I appreciate it very much.

Dr. REILLY. Thank you. Yes, sir.

The CHAIRMAN. Thank you, Senator Manchin.

Well, Dr. Reilly, I will invite you up to Alaska.

[Laughter.]

I am sure you have seen it from space. It is that really big one up at the top and, Senator Manchin, when we talk about critical minerals and where we have and rare earths, we have it here in Alaska.

Senator MANCHIN. I watch your show all the time, Gold Rush.

The CHAIRMAN. Well, we have more than gold. We have graphite. You want some graphite? Important stuff.

We have some very exciting things that are going on up in Alaska in terms of the prospects and how we can move forward in hopefully accessing them. So we would love to have you as a visitor to our state to see for yourself on the ground.

Let me ask just a couple quick questions here.

Others have mentioned the hazards programs in their states that are relevant and important to them. I have two quick matters here.

NSF has a series of seismic monitors that they have placed in the State of Alaska. They are slated, this is the USArray, they are slated to be removed at the end of this year. They have been in place for several years now. Right now, USGS is in talks with NSF and NOAA to adopt these monitors. We want them to stay in place.

My ask this morning is that you commit to working with me to retain the network of monitors within the state.

Dr. REILLY. Yes, ma'am, I'll be very happy to do that.

The CHAIRMAN. Good.

The other one is with regards to our volcano monitors. They are currently operating on an analog system and in 2020 the National Telecommunications and Information Administration will eliminate the frequency that they use to transmit that data. What we need to do is work on this conversion. Again, a simple ask, if you will commit to seeing that the Survey works diligently to convert those monitors in a timely manner so we can continue that very, very important hazard monitoring.

Dr. REILLY. Yes, Senator, we'll be very happy to work with you and your staff on these issues.

The CHAIRMAN. Good. Good. I appreciate that.

I have no further questions, but Senator Hoeven has arrived in time to ask questions.

You notice everybody is leaving, but it is not because we don't like you or don't have more questions, but we do have a series of votes that have started.

I will turn to Senator Hoeven.

Senator HOEVEN. Thank you, Madam Chairman.

Dr. Reilly, thanks for being here, and I certainly look forward to working with you.

As I know you are well aware, we have the Bakken oil formation in North Dakota and parts of Montana and Canada. I served as Governor of North Dakota from 2000 to 2010 and that was during the period where we really developed the shale play because we developed the technology to access it.

In 2008, I think, the USGS had actually estimated the reserves in the Bakken at about 3.6 billion recoverable barrels of oil, 1.8 trillion cubic feet of natural gas, recoverable, far more in plays. I then asked the USGS to come in, following a North Dakota Geological Survey that we have done to do an update, and you did that. That was in 2011. You released that in 2013 and estimated 7.4 billion barrels of recoverable oil in place, more than twice the previous estimate and 6.7 trillion cubic feet of natural gas.

Last August I hosted Acting Director William Werkheiser in North Dakota, to ask for a new update both because we have improved the technology so much and also because we have a lot more data because we have drilled so many more wells. We really do now need an update.

My first question would be, do you commit to following through on USGS' plans to continue a new comprehensive, broad-based resource estimate for the Williston Basin?

Dr. REILLY. Yes, Senator, we will.

In fact, one of my first actions will be to get with Bill Werkheiser and follow up on this and a number of other ongoing programs so I can get up to speed as rapidly as possible.

Senator HOEVEN. Good, excellent.

And then would you also work with my office, state officials and industry stakeholders in compiling the revised estimate?

Dr. REILLY. Absolutely. I look forward to working with you and your staff and others in any of these, in any of the questions that affect your state.

Senator HOEVEN. And also, you would commit to incorporating the latest data, geological surveys, and technical achievements in the oil patch out there?

Dr. REILLY. Yes, sir. I'll leave that to the professionals, but absolutely. We'll make sure that happens.

Senator HOEVEN. Right.

Well, the technology development has been so amazing that again, it is not only finding more of the resource, better understanding it, but also being able to recover it, not only technologically, but on an economical basis so that our recovery rates are going up as well.

It is not just a function of estimating the actual oil and gas in place, billions of barrels, trillions of cubic feet, but determining the recoverable number which we believe continues to grow significantly. That is why it is so important.

I appreciate your answers. Just one final question would be, if confirmed, will you continue the research focus that we have had in the coal patch because we really are doing a lot to develop the clean coal technology carbon capture storage and because we have both coal and oil and gas as well as tremendous water with the Missouri River. We really do have the ability to not only capture CO<sub>2</sub>, put it down a hole, but use it for tertiary oil recovery. So we would ask your help for that. It is not only important to our region of the country but really a global issue in terms of carbon capture.

Dr. REILLY. Certainly, Senator, we'll look forward to working with you and your staff on that. Certainly.

Senator HOEVEN. Okay, thanks, Doctor, I really appreciate it very much. Thank you.

Dr. REILLY. Thank you, Senator.

The CHAIRMAN. Dr. Reilly, thank you.

Dr. REILLY. Thank you.

The CHAIRMAN. I think you have demonstrated, not only through your responses today but even before you came to the Committee with your background, that you are a dedicated public servant. You have a very impressive resume and background and a level of interest that we think will not only serve those in the USGS well but the Administration and, again, the country. So we thank you for that.

Again, it is my intention to move you quickly through the Committee and hopefully move you quickly through the full process so that you can get to work, begin those 30 days of review that you

have committed to us and then focus on the priorities of this very important agency.

Again, we appreciate the support from all of your friends and family.

With that, the Committee stands adjourned.

[Whereupon, at 11:05 a.m. the hearing was adjourned.]

## **APPENDIX MATERIAL SUBMITTED**

---

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Questions from Senator John Barrasso**

**Question 1:** The U.S. Geological Survey oversees many important water resource management areas, including monitoring of groundwater, surface water quality, and stream flow levels. The U.S. Geological Survey's streamgage programs are especially important as the State of Wyoming works to build out its water resources. If confirmed, will you support continued efforts to monitor and report water resources through a national streamgage network?

**Response:** Yes. If confirmed, I will remain committed to continue working with partners to leverage available funding and to maximize the use of the USGS Groundwater and Streamflow Information Program and of cooperative matching funds to maintain a robust national network of streamgages.

**Question 2:** Wyoming Game and Fish and Western wildlife managers have been growing increasingly concerned about Chronic Wasting Disease (CWD) in mule deer and other large ungulates. CWD has the potential to fundamentally change wildlife populations across a large range. If confirmed, how would you coordinate with state and tribal wildlife agencies, and the Department of Agriculture, to conduct research for ongoing and emergent wildlife health hazards?

**Response:** I believe in the importance of collaborative relationships with state, local, and tribal agencies. On this issue specifically, it is my understanding that the USGS continues to support the early detection, risk assessment and management of chronic wasting disease for large game species and I look forward to ensuring that USGS coordinates its activities with federal, state and local, and tribal governments in a productive way.

**Question 3:** Like CWD, brucellosis, and other wildlife health hazards, pneumonia in bighorn sheep presents persistent management challenges for Western wildlife and livestock managers. The USGS has an ongoing research program at the Northern Rocky Mountain Science Center (NOROCK). If confirmed, will you commit to continuing this program and integrating bighorn pneumonia research with other wildlife research to more fully examine vectors for disease introduction?

**Response:** As a general matter I understand the value of USGS science and research on wildlife populations and issues of importance like CWD and brucellosis. I look forward to working with you and your staff to learn more about the importance of this program, should I be confirmed.



**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Questions from Senator Ron Wyden**

**Question 1:** I am concerned that Oregonians living and working in the Klamath Basin are going to face a tough water year because of low snowpack and a warm winter. The USGS performs two functions that are critically important for the wellbeing of the Basin: monitoring instream flows and working with the Klamath Tribes to monitor and study the sucker.

Will you commit to working with the Oregon delegation, as well as the other federal entities and stakeholders on the ground, to make this important work a priority?

**Response:** Yes. As we discussed in our meeting this week, if confirmed, I look forward to working with you, your staff, the Oregon delegation, and all stakeholders to ensure that USGS continues to play an important role in the Klamath Basin.

**Question 2:** I believe it's absolutely crucial to get the ShakeAlert West Coast early warning system up and running. In his written testimony at a January Energy and Natural Resources Committee hearing, Associate Director Applegate said, "an earthquake early warning system would be able to provide an additional layer of safety from inevitable large earthquakes." This program could save lives. However, the President's budget request cuts the ShakeAlert program again, for the second year in a row.

Are you willing to work with members of Congress and the West Coast Delegation to get the ShakeAlert system up and running?

**Response:** I know that this program is important to you and many communities, particularly on the West coast. While I am not at the Department and cannot speak to the current budget formulation, if confirmed I will work to ensure that essential monitoring capabilities are appropriately reviewed for additional action and that the USGS has the resources to carry out its important mission-related activities.

**Question 3:** The USGS, as the sole purely scientific agency at the Department of the Interior, provides a valuable service to our country. But for the agency to fulfill its mission, USGS scientists must be able to do their jobs. This means performing sound science without consideration or fear of political interference.

Will you commit to protecting USGS scientists from political interference?

**Response:** Yes. As I stated in my confirmation hearing, if someone were to come to me and say 'I want you to change this because it's the politically right thing to do,' I would decline. If confirmed I would ensure that USGS continues to play its role as a science-driven honest broker, and that decisions are based on facts and data.

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

Will you advocate to the President and OMB for the resources necessary for the USGS to fulfill its mission?

**Response:** Yes, I will.

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Questions from Senator James E. Risch**

**Question 1:** As with a number of land agencies, the U.S. Geological Society (USGS) is involved in fire science. How would you describe the USGS's role and responsibility in fire issues? What are your priorities for fire science research, and how will academic partners play into these priorities?

**Response:** The Secretary has expressed considerable interest in the Department's ability to fight fires effectively and safely. If confirmed, I will deploy the best available science and research, including collaboration with academic partners, to ensure Interior is equipped to address resource challenges in fire-prone areas, particularly across the West.

**Question 2:** USGS plays an important role in supporting research across a wide range of issues important to the West. What are your primary research objectives for the agency, and how will you interact with academic partners and other organizations to pursue these goals?

**Response:** Again, not being in the position and privy to the ongoing efforts within the bureau, I can't address specifics. As I mentioned at my hearing, if confirmed I plan to spend the first 30 days at the USGS becoming familiar with the ongoing efforts, priorities, and programs of the bureau. I would be happy to visit with you at any time to discuss my findings and will, of course, be always willing to meet with you or your staff to address any questions or suggestions you may have.

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Questions from Senator Mazie Hirono**

**Question 1:** Hawaii is home to two of our nation's highest threat volcanoes, Kilauea and Mauna Loa. As the population on Hawaii Island continues to grow, eruptions from these volcanoes pose an ever growing threat to our communities. USGS's Hawaiian Volcano Observatory is a critical asset to our state, as it monitors these volcanoes for activity and issues warnings so that the public has a chance to respond accordingly.

Do you think implementing the National Volcano Early Warning System (NVEWS) is important? If so, how will USGS do so provided the \$1.5 million funding cut and loss of 2 FTEs in the FY 2019 President's Budget Request for the implementation of NVEWS within the Volcano Hazards Program?

**Response:** While I am not at the Department yet and cannot speak to the current budget formulation, I understand the importance of the USGS operating and maintaining a network of volcano monitoring networks in order to improve eruption forecasts and warnings for local officials, emergency managers and the public. If confirmed, I look forward to working with you on this issue.

**Question 2:** I understand that you were not involved with the FY 2019 budget proposal that cut USGS's overall budget by almost 21 percent from the FY 2017 enacted funding level. However, you probably know that the biggest cuts were made to the Ecosystems mission and the Land Resources mission, while the Energy and Mineral Resources mission received a boost of more than \$11 million.

Going forward, will you advocate for budget resources for *all* mission areas, including those addressing climate change/water resources/volcano monitoring, so that USGS can continue to collect and disseminate impartial scientific information?

**Response:** Yes, I will advocate for appropriate resources to allow USGS to carry out necessary mission-related activities.

**Question 3:** Being an island state presents a lot of unique challenges. While Hawaii is surrounded by an enormous amount of salt water, we have a limited amount of fresh water. As scientific discovery advances we are learning more and more about how important our native forests are to our fresh water supply. Yet, our native forests in Hawaii are consistently under attack whether it be by invasive species such as albizia, climate change, fire, or by fungal diseases such as Rapid Ohia Death.

As you noted during your hearing, invasive species work falls under the Ecosystems mission area at USGS, which the President is proposing to cut funding for in FY 2019 by 40 percent. Will you commit to working with me to ensure that Hawaii receives the resources necessary to protect our native forests and increase our water security? Will you also commit to working with

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

me to ensure that other programs important to Hawaii, including Regional Climate Science Centers and Water Resource Research, have the resources necessary to continue their important work in our state?

**Response:** If confirmed, I look forward to learning more about the unique needs of the State of Hawaii, and to working with you and your colleagues to ensure the USGS has sufficient support to carry-out necessary mission-related activities.

**Question 4:** I understand that USGS is considering changing its current operating structure of dividing the nation into seven regions, with an eye towards consolidation. Do you see value in the current regional structure? If USGS does lower the number of regions, how will the agency capture the needs of diverse stakeholders, environments, cultures, communities and economies?

**Response:** I am not at the Department yet and cannot speak with any first-hand knowledge of any proposed alteration of the current operating structure. If confirmed, however, I look forward to working with you to find ways to ensure USGS continues to function as efficiently and effectively as possible.

**Question 5:** As you probably know the Washington Post ran a story a couple of weeks ago highlighting the departure of two USGS officials over a request made by Secretary Zinke they felt violated the USGS's scientific integrity policy.

As director, will one of your priorities be to ensure that morale within USGS is high and if so, how will you do that?

**Response:** As I noted during my confirmation hearing, if confirmed, I will spend the first 30 days meeting with USGS senior leadership to gather input on the needs of USGS. I also believe it will be my responsibility to empower USGS employees to pursue science and research, consistent with USGS's mission and its scientific integrity policy. USGS's greatest strength is the knowledge, expertise, and work ethic of its employees. It is my expectation that maintaining an open door policy and working directly with USGS employees will benefit morale.

**Question 6:** If you are confirmed as director, what are your plans for USGS to further integrate climate change science and adaptation into its mission?

**Response:** USGS has been conducting climate science since its creation in 1879. As our knowledge of the Earth and its processes continue to expand, USGS must continue to integrate climate science and research across multiple disciplines.

**Question 7:** Looking at the future for USGS, do you see opportunities for the agency to grow and strengthen? If so, in what areas? What role will partnerships across agencies play in shaping the future of USGS?

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Response:** The USGS will need to build upon existing, and seek out additional new, partnerships in order to strengthen the bureau for an ever evolving future. If confirmed, I hope to pursue new opportunities to partner with the private sector, other federal, state and local agencies, academic and other interested parties to find more efficient and effective ways of utilizing our resources and knowledge, in order to disseminate science to decision-makers, communities and the public.

**Question 8:** Can you describe a time when you experienced an attempt by a boss or manager to censor scientific evidence and how you handled the situation?

**Response:** No. I have never been told to change or remove scientific information at any time in my careers. As I mentioned in the hearing, I would see scientific integrity as being one of the top priorities for the USGS. Without good science as a foundation, it would be impossible to deliver good policy.

**Question 9:** What are your top 5 priorities for USGS?

**Response:** Because I have not been confirmed, I can only answer this question based on my personal opinions as to my top 5 priorities. Once confirmed, I would be in a position to look at the specific needs of the Bureau and define a more comprehensive set. That being said, my top 5 priorities would reflect my management philosophy and general priorities:

1. Deliver sound, comprehensive science data to policy makers, the public, and other government agencies without political influence or conflict of interest.
2. Given budget considerations, prioritize the efforts of the Bureau to align with the interests of the nation and our people.
3. Wherever possible, seek to develop and support cooperative efforts with other agencies at the local, state, and national level in order to deliver cost-effective programs.
4. Maintain a positive working environment free of conflict and any form of harassment.
5. Support the people of the USGS as they are the true resource of the Bureau.

**Question 10:** As part of my responsibility as a member of the Senate Committee on Energy and Natural Resources and to ensure the fitness of nominees for an appointed position, I am asking nominees to answer the following two questions:

- a. Since you became a legal adult, have you ever made unwanted requests for sexual favors, or committed any verbal or physical harassment or assault of a sexual nature?

**Response:** No

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

- b. Have you ever faced discipline, or entered into a settlement related to this kind of conduct?

**Response:** No.

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Question from Senator Tammy Duckworth**

**Question:** The U.S. Geological Survey (USGS) plays a significant role in the Midwest and the Great Lakes. Many USGS services are vital to Illinois specifically, from monitoring state-wide ground water quality to understanding species management. The latter is especially vital to invasive species research, with USGS involvement in numerous Asian Carp detection, control, and containment projects. Asian Carp are an extremely destructive invasive species in the Great Lakes. Not only can they deeply harm ecosystems and native fish populations, but they can also cause damage to commercial fisheries and infrastructure.

USGS saw a 21 percent budget cut in the Administration's FY19 budget request. Even more concerning, the Ecosystems Program was cut by 40 percent. This is the program charged with detecting and responding to invasive species like Asian Carp. As mentioned, there are multiple ongoing research projects at USGS working on this vital issue.

As the Director of USGS, how will you help safeguard the vital services and ongoing research around invasive species to protect the Great Lakes?

**Response:** While I am not at the Department and cannot speak to the current budget formulation, I understand the importance of the ongoing research USGS is conducting to provide scientific information and develop methods to better prevent the spread of Asian carp. I recognize the threat that Asian carp pose to the Great Lakes ecosystem and I look forward to supporting USGS's activities alongside the U.S. Fish and Wildlife Service and other relevant agencies on this important issue.



**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Questions from Senator Catherine Cortez Masto**

**Question 1:** USGS has well over 200 program offices, laboratories, field stations, and different facilities across the country, with numerous partnerships with universities and other educational institutions. Can you share your thoughts on the important role these partnerships – with universities or otherwise – have on the work and products created by USGS?

**Response:** As I mentioned in my testimony before the committee, I have found cooperative efforts with other organizations and institutions are an important method to develop “force multipliers” in delivering cost-effective programs by the USGS. In addition, these partnerships with educational institutions enable students to learn the operational art of the disciplines they study. From the USGS standpoint, it is an excellent way to obtain outside perspectives on our efforts and a very cost-effective way to evaluate the performance of what may become future USGS personnel. I think I also mentioned that I am passionate about providing STEM educational support to our future scientists and leaders and will always be interested in finding ways to support these initiatives.

**Question 2:** How will you, as an incoming director, leverage the knowledge and capabilities of universities and other research organizations and agencies?

**Response:** As I mentioned during the hearing I plan to spend the first 30 days in the position of Director seeking to understand the outline of the efforts of the Bureau within the primary mission areas and how these areas are aligned with the primary mission of the USGS. As part of that effort, I will be looking specifically at cooperative efforts with other national, state, local, and tribal organizations as well as university and industry partnerships. From the standpoint of operations, I will likely look to the NASA Jet Propulsion Lab (JPL) example as a template for how an excellent agency/university partnership can operate. As mentioned previously, I see the USGS partnerships with other agencies and organizations as a possibility to leverage research and development in a cost effective way.

**Question 3:** As you likely already know, Cooperative Research Units (CRU) is a cost-shared program between the U.S. Department of the Interior through USGS, state natural resource agencies, and leading universities across the country. This highly successful, cooperative program was established in the 1930s and has been sustained for more than 60 years. Currently, 39 Cooperative Fish and Wildlife Research Units are located on university campuses in 37 states. Although one does not currently exist in the State of Nevada, I am aware of local interest in working with USGS to create one. However, I am very concerned that the President’s Budget request zeroes out this program. Do you not think this collaborative network with scientific institutions is of benefit to the federal government and the decision-makers and resource managers that USGS works with?

**Response:** While I am not at the Department and cannot speak to the current budget formulation, I understand your interest in supporting federal, state, and university partnerships

**U.S. Senate Committee on Energy and Natural Resources**  
**Hearing on the Nomination of**  
**Dr. James F. Reilly II to be Director of the U.S. Geological Survey**  
**U.S. Department of the Interior**  
**March 6, 2018**

focusing on fish, wildlife, ecology and natural resources, specifically through the Cooperative Research Units. If confirmed, I look forward to continuing this dialogue with you.

**Question 4:** Natural hazardous events, like earthquakes, landslides, or wildfires can create a lot of damage to our infrastructure, and can have disastrous effects on people's lives and well-being. I am aware that the USGS has an office, the Office of Environmental Health that studies these events on their impacts on people's health in particular. Can you describe the factors USGS studies in how people's health is effected? Why is this important?

**Response:** USGS has a wide range of capabilities that provide support for natural hazard preparedness and response. Perhaps no area is more relevant to the general public than USGS's focus on public health and safety. USGS's hazard and risk assessments provide valuable information to local communities to enhance natural hazard resilience. This information is critical for first-responders, emergency managers, policymakers and the public, and if confirmed I will work to ensure the dissemination of this information remains a priority.

**Question 5:** How does USGS intend to advocate, investigate, and educate on this subject matter considering the President's Budget request zeroes out funding for environmental health?

**Response:** While I am not at the Department and cannot speak to the current budget formulation, I understand the importance of ongoing USGS research to determine whether or not contaminants or pathogens in the environment pose risks to humans or other organisms. I look forward to working with the USGS and its partners to determine where critical science gaps are and how we can work to address them.

**Question 6:** How could preparedness and response be improved if further study was made before a disaster occurs?

- What factors, if any, prohibit USGS from performing pre-disaster research?
- What areas of study are currently lacking and where can Congress be helpful in that effort?

**Response:** If confirmed, I intend to pursue opportunities to further leverage additional partnerships to expand USGS research capabilities. Much of USGS's activities in the natural hazards arena involve hazard risk assessments and monitoring, in order to provide actionable information to decision-makers to reduce threats to the public and property. These activities include long-term monitoring, geospatial data products, and streamgages. While the USGS maintains broad authority to conduct pre-disaster research, if confirmed, I look forward to discussing USGS priorities with you and ways the USGS can work with Congress to advance natural hazard preparedness.

**Question 7:** USGS generates an immense amount of daily information – whether it's in regards to seismic activity, volcanic activity, or anything else in your spectrum of expertise. How do you

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

plan translate all of this science and measurements into an emergency management plan that the public can understand and policies that help protect people's lives?

**Response:** It is critical that the research and science being carried out by USGS is accessible to the public. If confirmed, I intend to build upon USGS's efforts to collect and disseminate information, so that USGS data can inform first-responders, emergency managers, decision makers and the public. One such example in the natural hazards arena is USGS hazard risk assessments that have been used to inform municipalities of ways to develop better-defined building codes and land-use decisions. If confirmed, I hope to build on that foundation across mission areas.

**Question 8:** The President's Budget includes increased funding for "mineral and energy resources" (increasing to \$84.1 million, up from \$73.1 million) and a new initiative on 3-D mapping to provide information for mineral resource development. This is all very important information that we should have available to us. However, among the deductions—some by more than 30 percent—are the ecosystem, water resources, core science systems, natural hazards, and climate science investments. These are very important areas of science. People across the country rely on this science to make decisions that affect people at every level of local government and, in many cases, their professions and livelihood. With these budget numbers in mind, and knowing the natural resource priorities of this administration, how do you intend to prioritize these other areas of science?

**Response:** While I am not at the Department and cannot speak to the current budget formulation, I understand that the development of a budget, whether in the public or private sector, often involves difficult trade-offs. If confirmed, I intend to ensure the USGS mission has appropriate funding across the range of its mission areas, and I look forward to working with you to hear about your funding priorities for the USGS.

**Question 9:** With the proposed cuts to these science programs, how does that fall in line with USGS' mission to protecting the public from natural disasters, assessing water quality, providing geospatial data, and conducting the science necessary to manage the nation's living, mineral and energy resources?

**Response:** As I noted in your previous question, I cannot speak to the current budget formulation. However, if confirmed I will endeavor to listen to USGS employees and its partners, and to work with the leadership within the Department and the Administration to ensure USGS has the support to carry out its mission effectively.

**Question 10:** Do you think there would be any ripple effects or side-effects for researchers from other institutions to not be able to work with USGS scientists and the data they produce if these funding changes were to go through, especially in the fast-paced and changing world that we live in today where as much information as possible is required for all decision-making?

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Response:** It is my hope and expectation that if I am confirmed, I will be well-positioned to support the work of USGS scientists and ensure data and analysis is available for the public. USGS will continue to rely on partnerships to conduct a range of activities, whether through local support of streamgages or the advancement of 3D elevation data.

**Question 11:** Outdoor recreation on our public lands is a big driver in Nevada. For decades, all local stakeholders have worked to protect Nevada's public lands and safeguard our shared outdoor heritage for future generations. At the same time, my state is blessed with amazing paleontological and archaeological treasures in the places like the Basin and Range National Monument, Gold Butte National Monument, and many other places. I believe it is important to preserve these ecologically, culturally and historically significant public lands for future generations. As the Department of the Interior's top scientist, what are your specific goals to identify and report to the Congress and the Secretary on important paleontological and archaeological sites that deserve protection?

**Response:** As a westerner, I understand the importance and value of our public lands. I am not familiar with any specific reporting requirements to Congress and the Secretary on paleontological and archaeological sites but, if confirmed, I look forward to learning more about this issue and will be available to discuss these topics and your interests with you and your staff at your request.

**U.S. Senate Committee on Energy and Natural Resources  
Hearing on the Nomination of  
Dr. James F. Reilly II to be Director of the U.S. Geological Survey  
U.S. Department of the Interior  
March 6, 2018**

**Questions from Senator Rob Portman**

**Question 1:** With respect to the USGS 3D Elevation program (3DEP), can you tell me when the last time Ohio was mapped using lidar data, and how do you plan on updating and replacing the older, lower quality data? How much of Ohio still needs to be mapped using lidar data?

**Response:** It is my general understanding that statewide coverage in Ohio was obtained in 2006-2007; however, it is also my understanding that the publicly available lidar data in the State currently does not meet 3DEP standards. I look forward to working with you and USGS partners to expand the 3DEP coverage in Ohio, and more broadly move us closer toward nationwide 3DEP coverage.

**Question 2:** It has been brought to my attention that work done by USGS hydrologists on the environmental and health impacts of tar-based coatings may not have undergone a complete peer review process and have been difficult to replicate.

I believe that it is of utmost importance to produce sound science that can be peer reviewed, tested, and replicated. With several sealcoat manufacturers in my home state of Ohio, research done by USGS and others on tar-based coatings is critical for the future of these companies.

If confirmed, will you commit to ensuring that the data and methodologies used in USGS studies and research are made public?

**Response:** While I am not familiar with the details of the research USGS is undertaking pertaining to the environmental and health impacts of tar-based coatings, in general, I believe that it is fundamental to USGS' mission that USGS results and publications are not only made publicly available, but are easy to find and use.

**Question 3:** If confirmed, will you commit to ensuring USGS studies and research are peer reviewed by independent experts?

**Response:** If confirmed, I am committed to ensuring that independent peer review remains a fundamental aspect of USGS studies and research.



Charles A. Sternbach  
President

(281)-679-7333  
carbodude@gmail.com

March 1, 2018

Senator Lisa Murkowski, Chairman  
Senator Mary Cantwell, Ranking Member  
Senate Energy and Natural Resources Committee  
United States Senate  
Washington, D.C. 20510

Dear Chairman Murkowski and Ranking Member Cantwell:

On behalf of the more than 30,000 members of the American Association of Petroleum Geologists around the globe, I am writing to express our support for the nomination of Dr. James Reilly to serve as the next Director of the U.S. Geological Survey (USGS).

The American Association of Petroleum Geologists (AAPG) is one of the world's largest professional and scientific geological associations. Its members, working in industry, academia and government are focused on the science of finding and developing the hydrocarbon resources that provide the energy foundation for modern society.

Dr. Reilly, a member of AAPG since 1979, is a scientist and explorer. From his early days as a petroleum geologist, his deepwater research in Antarctica, and his work as an astronaut, Dr. Reilly has developed an extensive and thorough understanding of earth processes.

He has extensive experience in communicating the geosciences and the fundamental importance of science to his colleagues and the public. Dr. Reilly has served as co-chair of AAPG's astrogeology committee, participated in inspiring panels about space exploration at AAPG events, and led tours to NASA for large groups of geoscientists. He is a dedicated and gifted spokesperson for the geosciences, a skill that will support a successful tenure as USGS Director.

On a personal note, my wife and I were deeply inspired watching from a few miles away as Dr. Reilly launched into orbit atop Atlantis STS 117 in June 2007. On that day at the Kennedy Space Center we witnessed our nation's commitment to exploration, to pushing frontiers, to inspiring each other with the promise of a better future. It's what the United States is known for and we need to recapture that sentiment today.

James Reilly exemplifies that spirit and his AAPG colleagues proudly support his nomination to serve as Director of the U.S. Geological Survey.

Sincerely,

Charles Sternbach  
President