

# Conversation Contents

## NS Assessment

**"Johnston, David" <david.johnston@boem.gov>**

---

**From:** "Johnston, David" <david.johnston@boem.gov>  
**Sent:** Wed Jun 14 2017 13:00:27 GMT-0600 (MDT)  
**To:** "Houseknecht, David" <dhouse@usgs.gov>  
**Subject:** NS Assessment

Hi David,

Monday morning you informed us about news you received concerning a request for separate assessment reports: one from USGS, one from BLM, and one from BOEM. This approach is at odds with the understanding that Walter Cruikshank has regarding the assessment. It is his understanding that the 3 agencies are to work together to formulate a single report for Kate. Who does he need to talk to in USGS to make sure we're all on the same page?

Also, when can I expect your draft write-up that you were preparing following our discussions last week?

Hope all is well.

Dave

**"Houseknecht, David" <dhouse@usgs.gov>**

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**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Wed Jun 14 2017 13:02:11 GMT-0600 (MDT)  
**To:** Walter Guidroz <>wguidroz@usgs.gov>  
**Subject:** Fwd: NS Assessment

FYI

----- Forwarded message -----

From: **Johnston, David** <[david.johnston@boem.gov](mailto:david.johnston@boem.gov)>  
Date: Wed, Jun 14, 2017 at 3:00 PM  
Subject: NS Assessment  
To: "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>

Hi David,

Monday morning you informed us about news you received concerning a request for separate

assessment reports: one from USGS, one from BLM, and one from BOEM. This approach is at odds with the understanding that Walter Cruikshank has regarding the assessment. It is his understanding that the 3 agencies are to work together to formulate a single report for Kate. Who does he need to talk to in USGS to make sure we're all on the same page?

Also, when can I expect your draft write-up that you were preparing following our discussions last week?

Hope all is well.

Dave

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

# Conversation Contents

## USGS Resource Assessment Proposal - Alaska North Slope V3

### Attachments:

/42. USGS Resource Assessment Proposal - Alaska North Slope V3/1.1 USGS Resource Assessment Proposal - Alaska North Slope V3.docx  
/42. USGS Resource Assessment Proposal - Alaska North Slope V3/2.1 USGS Resource Assessment Prop - Alaska North Slope 6-13-17 mh.docx  
/42. USGS Resource Assessment Proposal - Alaska North Slope V3/6.1 USGS Resource Assessment Prop - Alaska North Slope V4.docx

## Walter Guidroz <wguidroz@usgs.gov>

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**From:** Walter Guidroz <wguidroz@usgs.gov>  
**Sent:** Tue Jun 13 2017 12:20:51 GMT-0600 (MDT)  
**To:** Murray Hitzman <mhitzman@usgs.gov>  
**CC:** "Houseknecht, David" <dhouse@usgs.gov>  
**Subject:** USGS Resource Assessment Proposal - Alaska North Slope V3  
**Attachments:** USGS Resource Assessment Proposal - Alaska North Slope V3.docx

Murray, please see attached. The map comprising Figure 1 still needs to be touched up but the verbiage reflects what we'd like to include in the document. Happy to discuss and/or modify as you see fit. Thanks...

Walter/Dave

## "Hitzman, Murray" <mhitzman@usgs.gov>

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**From:** "Hitzman, Murray" <mhitzman@usgs.gov>  
**Sent:** Tue Jun 13 2017 14:52:52 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**CC:** "Houseknecht, David" <dhouse@usgs.gov>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3  
**Attachments:** USGS Resource Assessment Prop - Alaska North Slope 6-13-17 mh.docx

Walter and David:

attached a modified version of your proposal. Mainly changed format and changed some verbs: "will" to "would", etc. Also I think you had wrong years for if things get delayed - you had CY17-18 and I believe should be CY18-19. Walter, one budget number for you to fill in on last page. Take a look, make changes and get back to me - I will have to pass it up to Bill W. (and Judy

and Joanne) to get sign off.

thanks!

murray

On Tue, Jun 13, 2017 at 1:20 PM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

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Walter/Dave

--

Murray W. Hitzman  
U. S. Geological Survey  
Associate Director - Energy and Minerals  
12201 Sunrise Valley Dr., MS 102  
Reston, VA. 20192  
703-648-4576

## Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>

---

**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Tue Jun 13 2017 15:04:01 GMT-0600 (MDT)  
**To:** Murray Hitzman <[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)>  
**CC:** David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: USGS Resource Assessment Proposal - Alaska North Slope V3

Thanks; looking at it now...

**From:** Hitzman, Murray [mailto:[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 4:53 PM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Cc:** Houseknecht, David <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

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12201 Sunrise Valley Dr., MS 102  
Reston, VA. 20192  
703-648-4576

## "Houseknecht, David" <dhouse@usgs.gov>

---

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 15:08:03 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

I'll let you take first pass and will then look at your edits. Gonna exercise now, so no rush.

On Tue, Jun 13, 2017 at 5:04 PM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

Thanks; looking at it now...

**From:** Hitzman, Murray [mailto:[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 4:53 PM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Cc:** Houseknecht, David <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

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U.S. Geological Survey  
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(703) 648-6466

## "Hitzman, Murray" <mhitzman@usgs.gov>

---

**From:** "Hitzman, Murray" <mhitzman@usgs.gov>  
**Sent:** Tue Jun 13 2017 15:34:14 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>, David Houseknecht <dhouse@usgs.gov>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

no - I think we are ok - I will go through a final version and then send that on to the 7th floor folks for approval. Thanks much to you both.

On Tue, Jun 13, 2017 at 4:27 PM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

Dave is taking a look but I've made a few slight tweaks and added the budget number at the end (FY17 costs of \$2.95 M minus \$0.1 M redirect = \$2.85 M). I also inserted page breaks in a couple of places because two of the tables became split between pages; just moved them to the following page. Dave will also be forwarding a final version of the map, which I can incorporate into a final version. Let me know if you need to talk further; cell phone's probably best for the rest of the evening...

Walter

**From:** Hitzman, Murray [mailto:[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 4:53 PM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Cc:** Houseknecht, David <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

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**Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>**

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**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Wed Jun 14 2017 10:01:45 GMT-0600 (MDT)  
**To:** Murray Hitzman <[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)>  
**CC:** "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: USGS Resource Assessment Proposal - Alaska North Slope V3  
**Attachments:** USGS Resource Assessment Prop - Alaska North Slope V4.docx

Murray, latest version attached, which includes Dave's latest map. There is text highlighted in yellow on the first page that consists of a sentence suggested by Dave, all focused around the fact that USGS has neither funds nor admin capacity to procure reprocessed 2D data. All other verbiage remains the same. The tables/figures towards the end were split between pages; I've inserted page breaks to get them on the same page but I'll let you decide how you'd like to format them. Thanks...

Walter

---

**From:** Murray Hitzman [mailto:[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)]  
**Sent:** Wednesday, June 14, 2017 11:09 AM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

Thanks. I will review after my talk, should be able to turn around by approx 1:30 pm your time

Sent from my iPhone

On Jun 14, 2017, at 9:42 AM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

FYI, I should be getting a final map from Dave any minute; once done I'll incorporate it into the document and send it your way. Dave also had two minor tweaks to the text; I'll explain those when I send the document to you.

Walter

**From:** Hitzman, Murray [mailto:[mhitzman@usgs.gov](mailto:mhitzman@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 5:34 PM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>; David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V3

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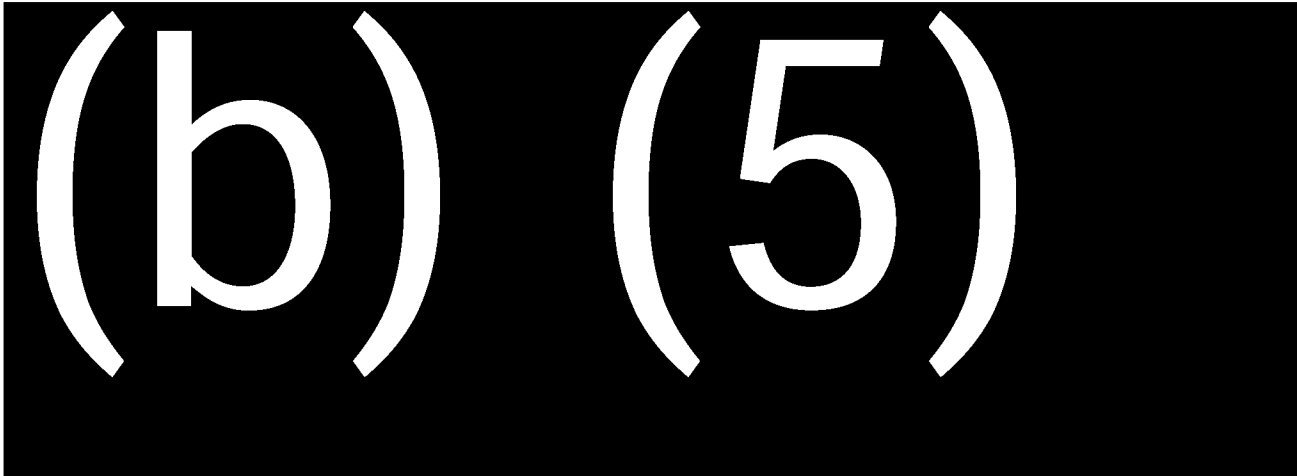
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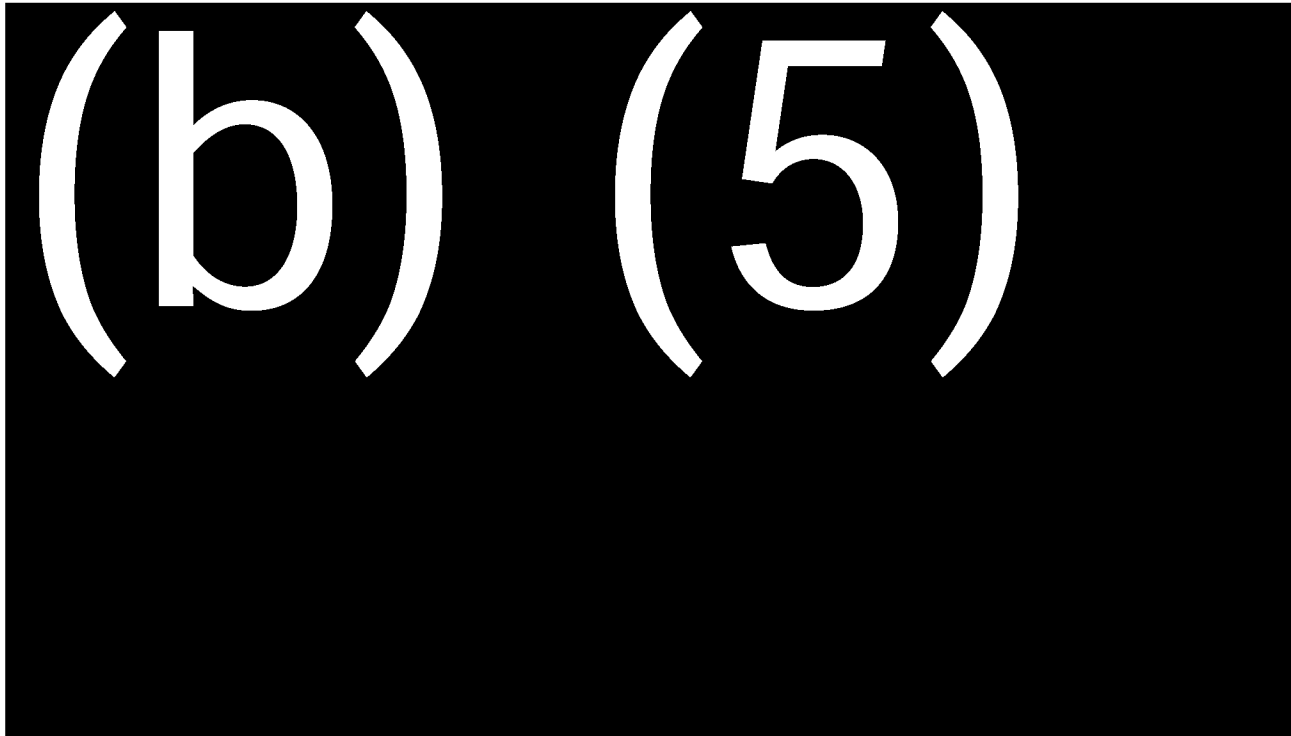
**USGS Resource Assessment Proposal  
Alaska North Slope  
June 12, 2017**

**Introduction**

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope (Figure 1), focusing on Federal lands including the National Petroleum Reserve in Alaska (NPR) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).



**Current Alaska North Slope Assessments**



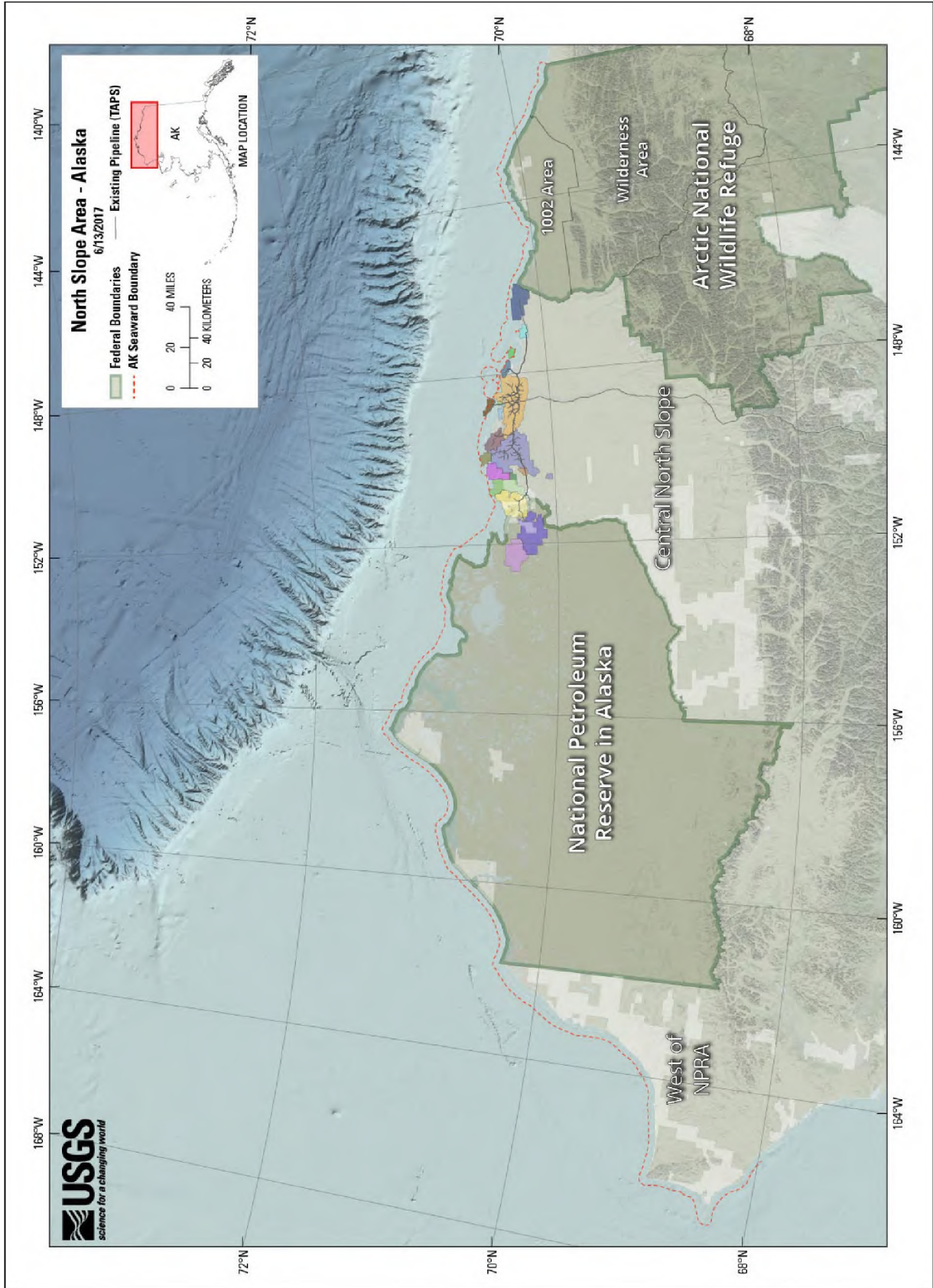


Figure 1: Base map of Alaska North Slope

(b) (5)

**Generalized Assessment Workflow**

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(b) (5)

**Table 1: Cost information, Alaska North Slope Assessment Options (numbers in millions of dollars)**

<b>Assessment</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
National Petroleum Reserve – Alaska	1.600	0.950	0.000	0.000	0.000	0.000	2.550
Alaska National Wildlife Refuge							
ANWR – Option 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ANWR – Option 2	1.350	2.550	0.950	0.000	0.000	0.000	4.850
ANWR – Option 3	0.000	0.375	2.250	0.950	0.000	0.000	3.575
Central North Slope	0.000	0.000	3.250	2.200	0.950	0.000	6.400
West of NPRA	0.000	0.000	0.000	1.250	2.400	0.750	4.400

Note: Totals not provided due to range of assessment scenarios provided

National Petroleum Reserve – Alaska (NPRA)



Figure 2: Estimated completion timeline for NPRA Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■											
Refine interpretations of seismic and well data		■										
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment				■								
Prepare release document (fact sheet)				■								
Conduct technical and editorial review				■								
Release assessment				■								
Hold briefings for Admin., Congress, State et al.				■								

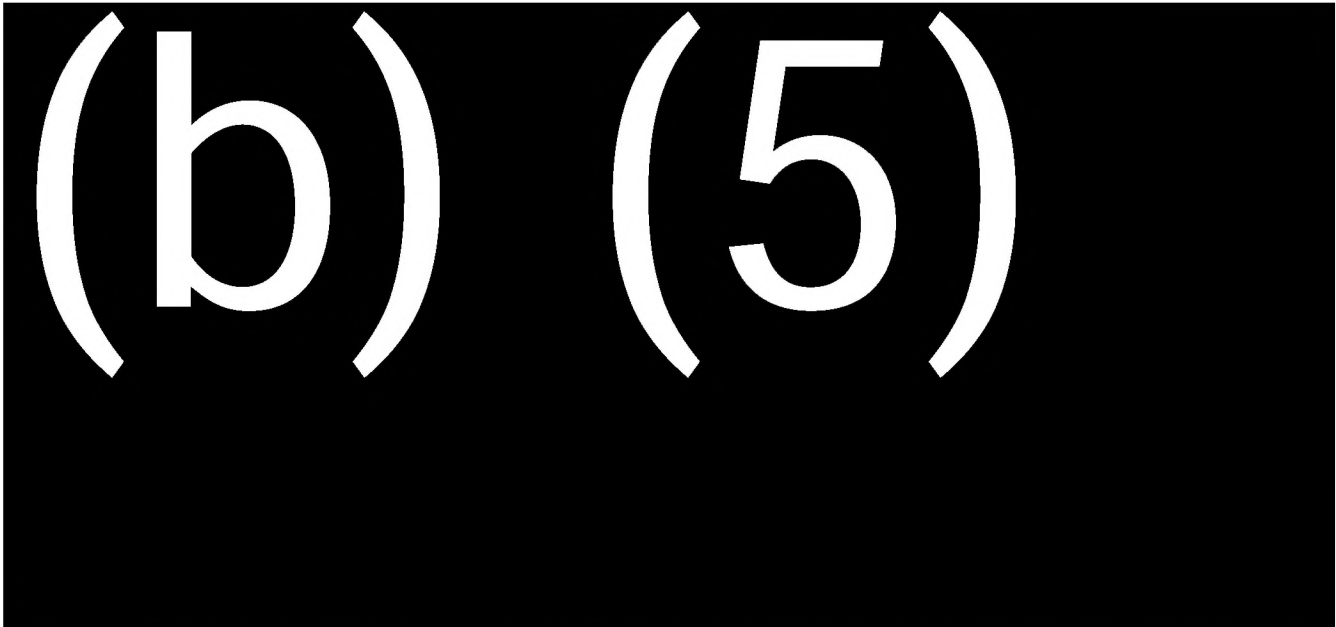
(b) (5)



**Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2-D data) *				█								
Review technical data and interpret seismic data				█								
Refine interpretations of seismic and well data					█							
Define AUs; prepare for public review & assessment						█						
Conduct public review meetings							█					
Conduct assessment								█				
Prepare release document (fact sheet)									█			
Conduct technical and editorial review										█		
Release assessment											█	
Hold briefings for Admin., Congress, State, et al.												

\* USGS does not procure reprocessed vintage 2-D seismic data, but provides geological and geophysical advice to seismic vendor

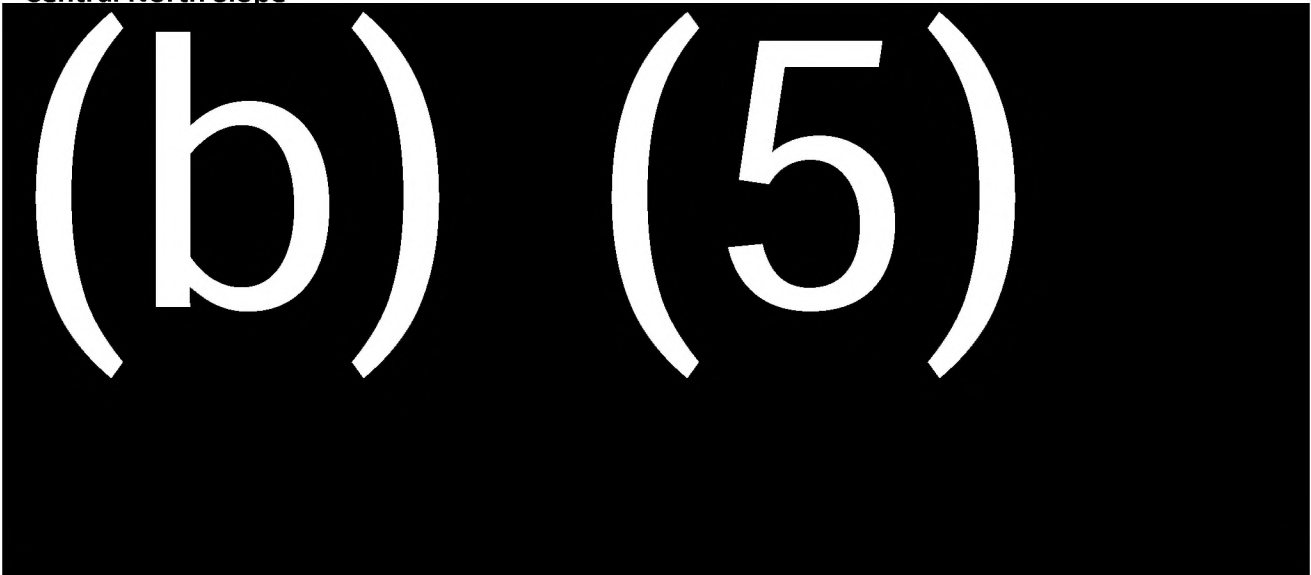


**Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3-D seismic survey and processing of data *				[Orange bar spanning 4Q 2017 to 3Q 2018]								
Review technical data and interpret seismic data						[Blue bar spanning 3Q 2018 to 2Q 2019]						
Refine interpretations of seismic and well data									[Blue bar spanning 1Q 2019 to 2Q 2019]			
Define AUs; prepare for public review & assessment										[Blue bar spanning 2Q 2019 to 3Q 2019]		
Conduct public review meetings											[Blue bar spanning 3Q 2019 to 4Q 2019]	
Conduct assessment												[Blue bar in 4Q 2019]
Prepare release document (fact sheet)												[Blue bar in 4Q 2019]
Conduct technical and editorial review												[Blue bar in 4Q 2019]
Release assessment												[Blue bar in 4Q 2019]
Hold briefings for Admin., Congress, State, et al.												[Blue bar in 4Q 2019]

\* USGS plays no role in designing or acquiring a 3-D seismic survey

Central North Slope



**Figure 5: Estimated completion timeline for Central North Slope Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire (license) existing 2-D/3-D seismic data												
Review technical data and interpret seismic data					■	■						
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment												
Prepare release document (fact sheet)												■
Conduct technical and editorial review												■
Release assessment												■
Hold briefings for Admin., Congress, State, et al.												

West of NPRA



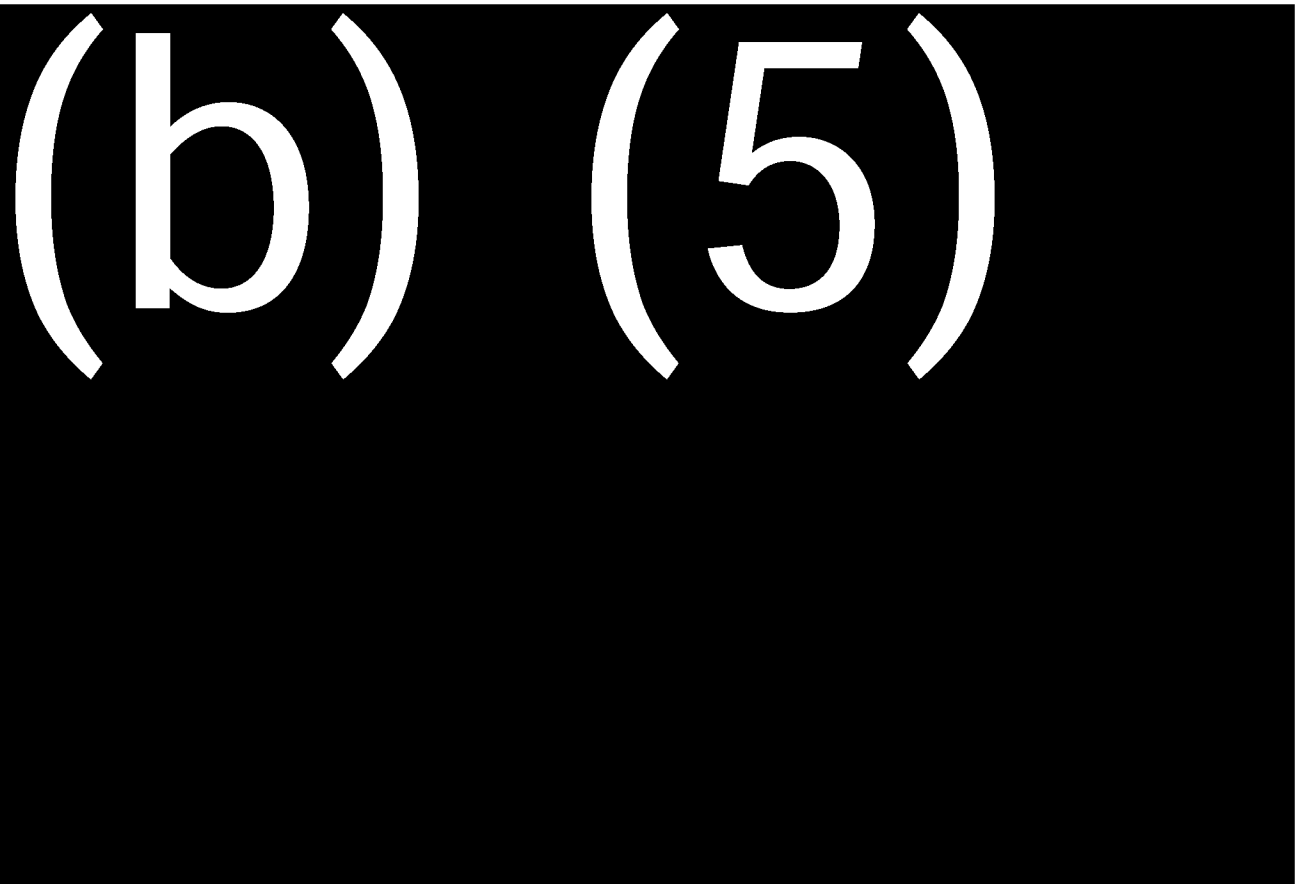
**Figure 6: Estimated completion timeline for West of NPRA Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2-D/3-D seismic data												
Review technical data and interpret seismic data												
Refine interpretations of seismic and well data												
Define AUs; prepare for public review & assessment												
Conduct public review meetings												
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review												
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

**DATE:** June 13, 2017  
**TO:** Vincent DeDito, Department of Interior Energy Counselor  
**FROM:** William H. Werkheiser, Acting Director, U.S. Geological Survey  
**SUBJECT:** Alaska North Slope Assessment Proposal (S.O. 3352)

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope, focusing on Federal lands including the National Petroleum Reserve in Alaska (NPR) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

**KEY TAKEAWAYS**



**Background**



(b) (5)

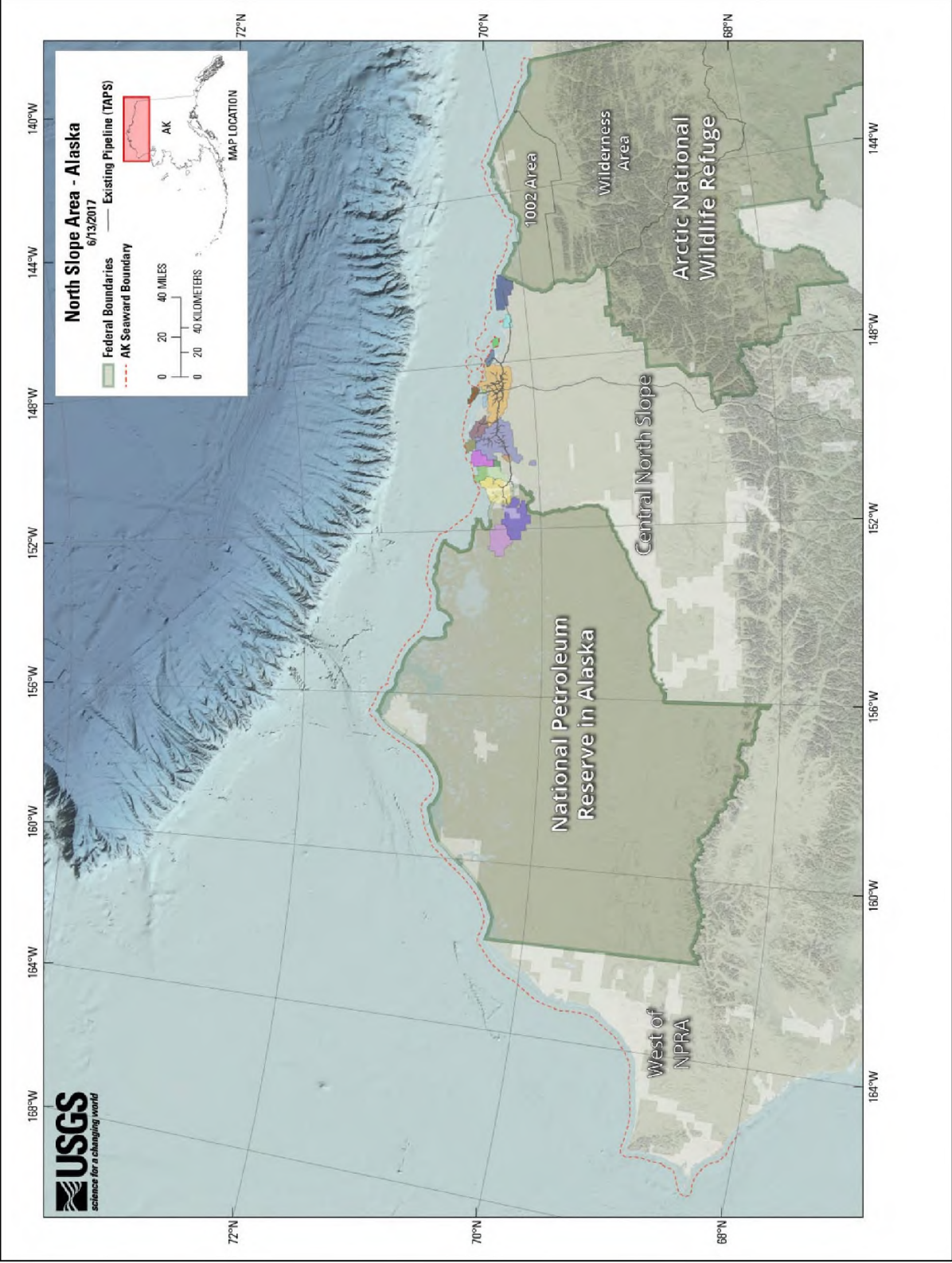
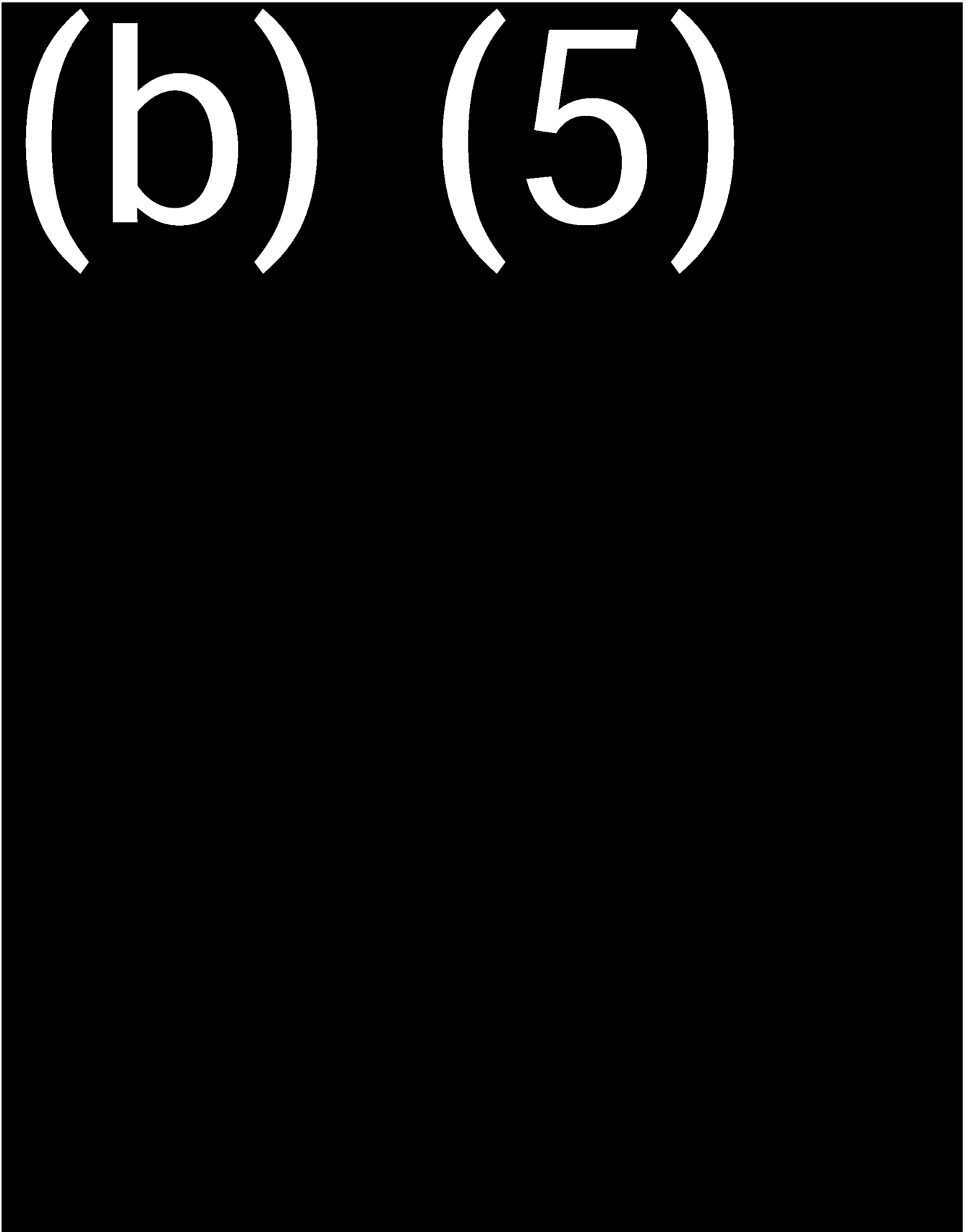


Figure 1: Base map of Alaska North Slope



(b) (5)

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**PROPOSED NORTH SLOPE ASSESSMENTS:**

**National Petroleum Reserve – Alaska (NPRA)**

(b) (5)

**Figure 2: Estimated completion timeline for NPRA Resource Assessment**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■											
Refine interpretations of seismic and well data		■										
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review				■								
Release assessment												
Hold briefings for Admin., Congress, State et al.				■								

(b) (5)

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Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2-D data) *				█	█	█						
Review technical data and interpret seismic data					█	█	█					
Refine interpretations of seismic and well data							█	█				
Define AUs; prepare for public review & assessment								█	█			
Conduct public review meetings												█
Conduct assessment												█
Prepare release document (fact sheet)												█
Conduct technical and editorial review												█
Release assessment												█
Hold briefings for Admin., Congress, State, et al.												█

\* USGS does not procure reprocessed vintage 2-D seismic data, but provides geological and geophysical advice to seismic vendor.

(b) (5)

**(b) (5)**

**Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3-D seismic survey and processing of data *				[Orange bar spanning 4Q 2017 to 3Q 2018]								
Review technical data and interpret seismic data						[Blue bar spanning 3Q 2018 to 2Q 2019]						
Refine interpretations of seismic and well data									[Blue bar spanning 1Q 2019 to 2Q 2019]			
Define AUs; prepare for public review & assessment										[Blue bar spanning 2Q 2019 to 3Q 2019]		
Conduct public review meetings											[Blue bar spanning 3Q 2019 to 4Q 2019]	
Conduct assessment												[Blue bar in 4Q 2019]
Prepare release document (fact sheet)												[Blue bar in 4Q 2019]
Conduct technical and editorial review												[Blue bar in 4Q 2019]
Release assessment												[Blue bar in 4Q 2019]
Hold briefings for Admin., Congress, State, et al.												[Blue bar in 4Q 2019]

\* USGS plays no role in designing or acquiring a 3-D seismic survey.

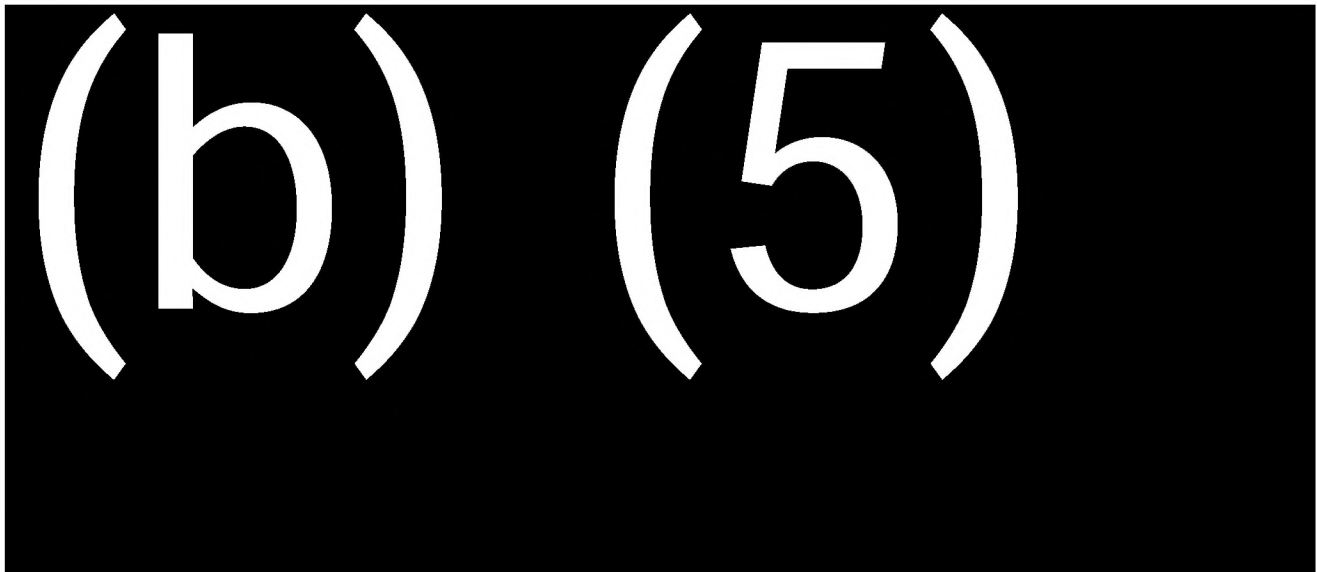
**Central North Slope**

**(b) (5)**

**Figure 5: Estimated completion timeline for Central North Slope Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire (license) existing 2-D/3-D seismic data			[Blue bar spanning 3Q 2019 to 4Q 2019]									
Review technical data and interpret seismic data					[Blue bar spanning 1Q 2020 to 2Q 2020]							





**Table 1: Cost information, Alaska North Slope Assessment Options (numbers in millions of dollars)**

<b>Assessment</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
National Petroleum Reserve – Alaska	1.600	0.950	0.000	0.000	0.000	0.000	2.550
Alaska National Wildlife Refuge							
ANWR – Option 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ANWR – Option 2	1.350	2.550	0.950	0.000	0.000	0.000	4.850
ANWR – Option 3	0.000	0.375	2.250	0.950	0.000	0.000	3.575
Central North Slope	0.000	0.000	3.250	2.200	0.950	0.000	6.400
West of NPRA	0.000	0.000	0.000	1.250	2.400	0.750	4.400

Note: Totals not provided due to range of assessment scenarios provided.

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**Contacts:** Murray Hitzman, Associate Director for Energy and Minerals, U.S. Geological Survey, [mhitzman@usgs.gov](mailto:mhitzman@usgs.gov), 703-648-4576  
Walter Guidroz, Energy Resources Program Coordinator, U.S. Geological Survey, [wguidroz@usgs.gov](mailto:wguidroz@usgs.gov), 703-648-6421

**DATE:** June 13, 2017  
**TO:** Vincent DeVito, Department of Interior Energy Counselor  
**FROM:** William H. Werkheiser, Acting Director, U.S. Geological Survey  
**SUBJECT:** Alaska North Slope Assessment Proposal (S.O. 3352)

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope, focusing on Federal lands including the National Petroleum Reserve in Alaska (NPRA) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

### KEY TAKEAWAYS

- USGS can conduct energy resource assessments of NPRA, ANWR 1002 area, central North Slope, and west of NPRA. Assessments would be conducted in collaboration with Alaska Region BLM and BOEM. Alaska Department of Natural Resources Division of Geological and Geophysical Surveys (DGGGS) and the Alaska Department of Natural Resources Division of Oil and Gas (DOG) personnel would be invited to contribute if funding can be secured.
- A USGS energy resource assessment of NPRA could be completed by late 4Q CY2017. Total USGS costs for this NPRA assessment are estimated at \$2.55 M. USGS FY17 costs of \$1.6 M can be covered but an additional \$0.5M for support of Alaska DGGGS and DOG personnel is required. FY18 costs of \$0.95M for the project have not been fully included in the President's FY18 budget request.
- Three options are possible for a USGS energy resources assessment of ANWR 1002:
  - Determination of no new data so no assessment is conducted (cost \$0)
  - New USGS energy resource assessment based on reprocessing of 1984-85 2-D seismic data. However, USGS has neither the funds nor the administrative capacity to procure the reprocessed data. Public release of results of such an assessment would be planned for late 4Q CY2018. Total USGS costs (FY17-19) are estimated at \$4.85 M.
  - New USGS energy resource assessment utilizing data from a new 3-D seismic survey (not procured or managed by USGS). Release of the assessment results would occur during late CY2019. Total USGS costs (FY17-19) are estimated at \$3.575 M.
- USGS energy resource assessments could be completed by end CY2020 for the central North Slope and by late CY2021 for the area west of NPRA. Funding for the proposed assessments has not been included in the President's FY18 request.
- The Energy Resources Program would have to secure additional funding for FY18 and beyond to undertake the proposed assessments.

### Background

USGS assesses undiscovered, technically recoverable oil and gas resources of the U.S. and the world, using a variety of methodologies that have been peer reviewed by the American Association of Petroleum Geologists Committee on Resource Evaluation. USGS conducts assessments when directed to do so by the Administration or Congress, when requested to do so by Federal land-management agencies, or when compelling new data become available that may substantially modify the scientific perspective of undiscovered resource potential.

This plan for energy assessments of the North Slope of Alaska (Figure 1) was prepared by the U.S. Geological Survey (USGS) in collaboration with the Bureau of Land Management – Alaska Region (BLM) and the Bureau of Ocean Energy Management – Alaska OCS Region (BOEM). USGS’s mission includes assessing oil and natural gas resources of all onshore and State waters areas of the United States. BLM and BOEM manage oil and gas resources of Federal lands and the Outer Continental Shelf (OCS), respectively. Their missions include conducting lease sales and collecting and archiving pertinent exploration and development data.

These assessment plans include personnel from the Alaska Department of Natural Resources Division of Geological and Geophysical Surveys (DGGs) and the Alaska Department of Natural Resources Division of Oil and Gas (DOG) to work in support of the assessments.

### **Current Alaska North Slope Assessments**

Current USGS assessments of the North Slope include:

- \* Conventional oil and gas in NPRA (2010)
- \* Conventional oil and gas in the Central North Slope (2005)
- \* Conventional oil and gas in the ANWR 1002 area (1998)
- \* North Slope-wide assessments of “unconventional” oil and gas in shale (self-sourced) reservoirs (2012), gas in coal beds (2006), and gas in hydrates (2008)

USGS assessments of the Alaska North Slope differ somewhat from those of the Lower 48 because the North Slope is an under explored basin, with fewer exploration wells and producing fields than most Lower 48 basins. North Slope assessments therefore rely more heavily on interpretation of seismic reflection and other subsurface data and on information derived from field work focused on rock formations that may be exploration objectives beneath the North Slope.

For example, the USGS conducted an assessment of NPRA in 2002 following the discovery and development of the giant Alpine (Colville River) field, which represented a petroleum trap type previously unknown on the North Slope. However, subsequent industry drilling in NPRA on leases covering geologic features similar to Alpine revealed that the oil charge in the Alpine field changes to mainly a gas charge just 25 miles west of Alpine. As these results became known and a sufficient amount of data from the new wells became available, USGS updated the NPRA assessment in 2010, with the main result being a significant reduction in the volume of oil estimated to be present.

In that 2010 assessment, the two plays estimated to contain the greatest potential for undiscovered oil were the Torok and Nanushuk Formations, in which huge oil discoveries have been announced since 2015. Recently announced discoveries include Pikka (>1,200 million barrels of oil (MMBO) recoverable from Nanushuk), Willow (>300 MMBO recoverable from Nanushuk), and Smith Bay (perhaps >1,000 MMBO recoverable from the Torok). If these announced volumes of recoverable oil are verified by development, the estimated largest oil accumulation size (a significant input to the assessment methodology) would be increased by one to two orders of magnitude compared to the assessment input used in the 2010 assessment of these formations. Thus, these significant discoveries represent compelling new data that may substantially modify the scientific perspective of potential resources in these plays.

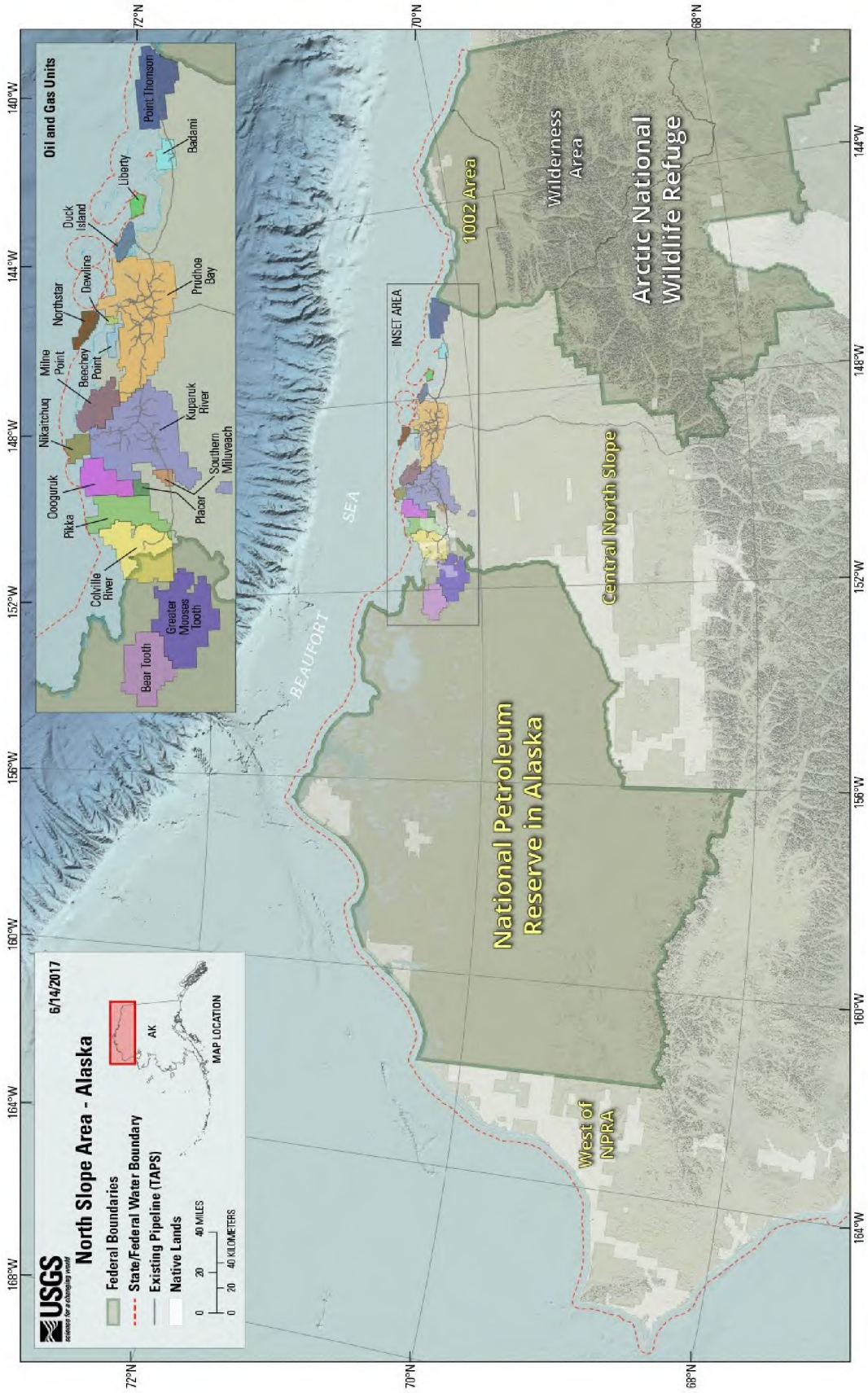


Figure 1: Map of Arctic Alaska showing oil and gas assessment areas (indicated by yellow text). Oil and gas units shown in inset map.



## Generalized USGS Assessment Workflow

The assessments directed by Secretarial Order 3352 (Section 4b) will be conducted using the following generalized workflow that is followed for all USGS energy assessments. USGS protocol requires that steps 1-7 be as transparent as permitted by non-disclosure agreements related to proprietary data.

1. Acquire or access essential seismic reflection (and perhaps other pertinent data) to be used in conducting each assessment. This step in the workflow will determine the start date of each assessment and therefore will determine the date on which a completed assessment will be published. Possible start dates for North Slope assessments are addressed in the following section.
2. Assemble a team of scientists with expertise in pertinent disciplines of the earth sciences (e.g., petroleum geologist, geophysicist, seismic interpreter, organic geochemist, structural geologist, etc.). Assessment workflow steps 1 – 7 for NPRA and the ANWR 1002 Area will comprise a team that includes scientists from USGS, BLM and BOEM.
3. Compile all additional data pertinent to the assessment, determine additional data needs, acquire additional data as budget permits, integrate all data into digital data base, and analyze/interpret all data in a digital workflow.
4. Define petroleum systems, plays, or assessment units that fully represent formations known to contain or hypothesized to contain technically recoverable oil and natural gas resources.
5. Communicate and coordinate with Alaska technical agencies, as appropriate, throughout the data collection, analysis, and interpretation workflow. The Alaska agencies will include DGGs, DOG, and the Alaska Oil and Gas Conservations Commission.
6. Hold public review meetings in Anchorage, Houston and other locations as appropriate to (a) explain rationale for conducting, and timeline for completing, assessment; (b) present scientific basis of assessment (e.g., explain framework geology, regional and local petroleum systems, likely reservoir units, trap geometries, and key risk factors that determine the probability that technically recoverable resources are present; (c) present fundamental geological entities (i.e., plays or assessment units) to be assessed; (d) present details of assessment methodology to be used; and (e) seek constructive feedback from knowledgeable scientists. USGS experience indicates that these public meetings build buy-in and support for assessment results from State agencies and the oil industry.
7. Revise fundamental aspects of the geological framework of the assessment based on constructive feedback from public meetings and follow-up discussions with petroleum geology experts from State agencies and the oil industry.
8. Conduct assessment – USGS Alaska project team presents the assessment framework and inputs to USGS National and Global Assessment review panel. Results from this meeting are subjected to rigorous statistical analysis, which generates probabilistic results.
9. Technical reports will be produced that summarize the geological science that forms the foundation of the assessment. The assessment results are then incorporated into non-technical fact sheets summarizing results. These documents are submitted to USGS technical and

editorial review as required by USGS Science Integrity Policy. Fact sheets are given priority to assure timely release.

- Assessment results are released to the public by publication of fact sheet. Simultaneous briefings are presented to the Department of the Interior and elsewhere to share results with the Administration, Congress, and the public at large.

**PROPOSED NORTH SLOPE ASSESSMENTS:**

**National Petroleum Reserve – Alaska (NPRA)**

Review of technical data has been initiated and involves personnel from USGS, BOEM and BLM. Primary data will include 3-D seismic reflection data, exploration well data, and a large volume of ancillary data generated by ongoing USGS research and data submitted to the BLM by industry.

BOEM has conducted advanced analysis of 3-D seismic data for NPRA lease sales, and USGS has conducted research on all rock units to be evaluated. The first three tasks of the workflow, therefore, will comprise review of all data and analyses by an integrated team of USGS, BLM and BOEM personnel and building of consensus on plays to be assessed and risk structure to be imposed on the assessment. It is anticipated that this step can be completed late in the third quarter (3Q) of calendar year (CY) 2017.

Public review meetings and the USGS assessment could be held in 4Q CY2017, with a date for results release in late 4Q CY2017 (Figure 2). Total USGS costs for this NPRA assessment are estimated at \$2.55 million. Included in these costs is \$0.50 million dedicated to the Alaska Department of Natural Resources to conduct analytical services in support of the NPRA resource assessment.

**Figure 2: Estimated completion timeline for NPRA Resource Assessment**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■											
Refine interpretations of seismic and well data		■										
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review				■								
Release assessment												
Hold briefings for Admin., Congress, State et al.				■								

## **Alaska National Wildlife Refuge 1002 Area**

Three ANWR 1002 Area assessment scenarios are considered, which are detailed below:

### **Scenario 1: Assumes that existing vintage 2-D seismic data are not reprocessed**

No updated assessment would be conducted because no new post-1998 data exist that would compel the USGS to consider conducting a new assessment. The only new information available since completion of the 1998 assessment is summarized below.

- A. Information from two wells (Stinson and Warthog) drilled in nearby state waters prior to completion of the 1998 assessment was released after the assessment and analyzed by USGS. The Stinson well discovered oil in two rock units, but the volumes of oil were determined to be sub-economical. The Stinson lease blocks were relinquished and subsequently acquired by another company, although no further exploration has been conducted. The Warthog well was declared a dry hole, and the lease blocks were relinquished and never re-acquired. The formations in which oil was found in the Stinson well and the formation that was the main objective of the Warthog well were assessed by USGS in 1998. The information gleaned from data released from both wells is consistent with the results of the 1998 assessment.
- B. After nearly three decades of delays, the giant oil, gas, and condensate accumulation at Point Thomson is now being developed by ExxonMobil. The limited available seismic and well data indicate that little or none of the main reservoir extends into the 1002 area. Moreover, the structure of the hydrocarbon trap indicates unfavorable conditions in the 1002 area (i.e., the ANWR area is down dip from the Point Thomson accumulation).
- C. Oil accumulations discovered by Exxon in 1975 on Flaxman Island, just offshore from the 1002 Area, and by BP in 1994 at Sourdough, located less than a mile west of the 1002 area, have not been developed. BP dropped the leases over Sourdough, whose well data remain proprietary, after disappointing results at the nearby Badami field, but the leases have been incorporated into the Point Thomson Unit. ExxonMobil has indicated that it is evaluating the possibility of developing the Flaxman Island and Sourdough accumulations but no development decision has been made. Despite these recent developments, USGS was aware of the Flaxman Island and Sourdough discoveries prior to completion of the 1998 assessment.

Based on the information summarized above, the USGS concludes that no basis for conducting an updated assessment exists.

### **Scenario 2: Assumes that the 1984-1985 2-D seismic data will be reprocessed (not procured or managed by USGS)**

The timeline for this scenario includes procurement of state-of-the-art industry reprocessing of the vintage data during 4Q CY2017, and reprocessing of the vintage data during late 4Q CY2017 through early 2Q CY2018 (the seismic company that collected original data estimates six months for reprocessing). USGS and BOEM scientists would make multiple visits to the company conducting the reprocessing to provide interactive geological constraints to assure optimal results. During the reprocessing, new data would be collected from well samples adjacent to the 1002 Area and from outcrop samples collected during a short field season in 2017. These data would include constraints on oil source-rock quality, uplift and exhumation history, and reservoir-rock quality. USGS recommends collection of an airborne gravity gradiometry survey across the 1002 Area pending sufficient funds

(would require approximately \$2.5M), but neither procurement nor interpretation of such a survey are included in the USGS budget.

After reprocessed seismic data were delivered, a team of USGS and BOEM scientists would interpret the data, produce maps, and define plays (assessment units) to be evaluated. It is estimated that these tasks could be completed during 1Q-3Q CY2018 (Figure 3). This schedule should allow public review meetings to be held during 3Q-4Q CY2018, with the assessment and technical review of release materials during 4Q CY2018. Public release of results would be planned for late 4Q CY2018.

Total USGS costs are estimated at \$4.85 million over three fiscal years. Included in these costs are \$0.75 million dedicated to the Alaska Department of Natural Resources to conduct tasks associated with analytical services in support of the ANWR 1002 Area assessment.

**Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2-D data) *				■	■	■						
Review technical data and interpret seismic data					■	■	■					
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment									■			
Prepare release document (fact sheet)												
Conduct technical and editorial review										■		
Release assessment												
Hold briefings for Admin., Congress, State, et al.												■

\* USGS does not procure reprocessed vintage 2-D seismic data, but provides geological and geophysical advice to seismic vendor.

**Scenario 3: Assumes that a 3-D seismic survey is conducted during 4Q CY2017 and 1Q CY2018 (not procured or managed by USGS)**

This task, including initial processing of the new 3-D data, would be difficult, but not impossible, to achieve by end CY 2019 (Figure 4). Interpretation and mapping of the 3-D and ancillary data by USGS and BOEM scientists would occur during 3Q and 4Q of CY 2018 and 1Q of CY2019. Definition of plays (assessment units) through public review of the assessment work products would be completed by late 3Q of 2019, and the assessment, report preparation, technical review, and release of the assessment results would occur during 4Q of 2019.

If the 3-D seismic survey was not completed until winter 2018-2019, the timeline would be delayed by one year. In that case, the workflow for assessment of the Central North Slope would be advanced by one year and would commence during 3Q or 4Q of 2018.

Total USGS costs are estimated at \$3.575 million. Included in these costs are \$0.5 million dedicated to the Alaska Department of Natural Resources to collaborate in field work and ancillary analytical tasks.

**Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3-D seismic survey and processing of data *				[Orange bar spanning 4Q 2017 to 3Q 2018]								
Review technical data and interpret seismic data						[Blue bar spanning 3Q 2018 to 2Q 2019]						
Refine interpretations of seismic and well data									[Blue bar spanning 1Q 2019 to 2Q 2019]			
Define AUs; prepare for public review & assessment										[Blue bar spanning 2Q 2019 to 3Q 2019]		
Conduct public review meetings											[Blue bar spanning 3Q 2019 to 4Q 2019]	
Conduct assessment												[Blue bar in 4Q 2019]
Prepare release document (fact sheet)												[Blue bar in 4Q 2019]
Conduct technical and editorial review												[Blue bar in 4Q 2019]
Release assessment												[Blue bar in 4Q 2019]
Hold briefings for Admin., Congress, State, et al.												[Blue bar in 4Q 2019]

\* USGS plays no role in designing or acquiring a 3-D seismic survey.

**Central North Slope**

Assessment of the Central North Slope would rely heavily on the public release of tax-incentive 3-D seismic reflection data by the Alaska Department of Natural Resources. Assuming that several of these data sets are released before or during 2Q CY2018 and that funding is available for the USGS to license other 3-D and 2-D seismic data, an assessment could be completed by the end of CY2020 (Figure 5). As no Federal lands are involved in this assessment, much or all of the technical analyses would be completed by USGS scientists, with the expectation that BOEM and BLM scientists could provide technical review of the interpretations. Alaska state agencies would be invited to collaborate on data interpretation and play (assessment unit) definition.

If the ANWR 1002 Area 3-D seismic survey is not completed until winter 2018-2019, the timeline in Figure 5 could be advanced by one year. In that case, the workflow for assessment of the Central North Slope would commence during 3Q or 4Q of 2018.

Total USGS costs are estimated at \$6.4 million. Included in these costs are \$0.4 million dedicated to the Alaska Department of Natural Resources to collaborate in field work and ancillary analytical tasks.

**Figure 5: Estimated completion timeline for Central North Slope Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire (license) existing 2-D/3-D seismic data			■	■								
Review technical data and interpret seismic data				■	■	■						
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment												
Prepare release document (fact sheet)									■			
Conduct technical and editorial review									■			
Release assessment										■		
Hold briefings for Admin., Congress, State, et al.												

**West of NPRA**

The area west of NPRA, both onshore and beneath Alaska state waters, contains only sparse and very old (1970s vintage) 2-D seismic data. Workflow for this assessment would include review with BOEM of seismic data in the Chukchi Sea to evaluate the extent to which those data may inform the geology of the onshore and state waters. Unless new seismic data become available, it is anticipated that existing data could be reviewed and interpreted, and that an assessment would be conducted between 3Q CY2020 and 4Q CY2021 (Figure 6). It is anticipated that much or all of the technical analyses would be completed by USGS scientists with the expectation that BOEM and BLM scientists will provide technical review of the interpretations. Because much of the onshore area consists of Native lands, USGS would also invite the Arctic Slope Regional Corporation to provide a technical review of USGS work.

Total costs are estimated at \$4.4 million. Included in these costs are \$0.2 million dedicated to the Alaska Department of Natural Resources to collaborate in field work and ancillary analytical tasks.

**Figure 6: Estimated completion timeline for West of NPRA Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2-D/3-D seismic data							■	■	■			
Review technical data and interpret seismic data								■	■	■		
Refine interpretations of seismic and well data									■	■	■	
Define AUs; prepare for public review & assessment										■	■	
Conduct public review meetings											■	
Conduct assessment												
Prepare release document (fact sheet)												■
Conduct technical and editorial review												■
Release assessment												■
Hold briefings for Admin., Congress, State, et al.												

### USGS Budgets

Costs for each assessment by Fiscal Year are included in Table 1 on the following page. The current annual budget (FY17) of the USGS Alaska Petroleum Systems (APS) project is \$1.5 million. This budget includes research on North Slope and southern Alaska basins. The Energy Resources Program is currently redirecting a limited amount of funding (approximately \$0.1 million) from work in southern Alaska to the North Slope. The current budget shortfall to the APS to accomplish what is required for the assessments from the FY17 budget is \$2.85 million. To increase the efficiency of the rapidly upcoming in-state summer field work USGS requests that personnel from both the Alaska Division of Geological and Geophysical Surveys (DGGs) and the Alaska Department of Natural Resources Division of Oil and Gas (DOG) participate in field studies in support of the assessments if a second helicopter can be contracted; USGS would pay per diem costs for all personnel involved (cost of \$0.5M). The current budget does not cover the costs for the Alaska personnel. Funds to supplement the existing APS budget need to be secured as soon as possible within the Department.

Funding for the proposed assessments has not been included in the President’s FY18 request. Proposed budgets for the Energy Resources Program will have be modified to cover the proposed assessments and additional funding secured. Funding for the assessments in FY19 and beyond will be built into upcoming budget requests.

**Table 1: Cost information, Alaska North Slope Assessment Options (numbers in millions of dollars)**

<b>Assessment</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
National Petroleum Reserve – Alaska	1.600	0.950	0.000	0.000	0.000	0.000	2.550
Alaska National Wildlife Refuge							
ANWR – Option 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ANWR – Option 2	1.350	2.550	0.950	0.000	0.000	0.000	4.850
ANWR – Option 3	0.000	0.375	2.250	0.950	0.000	0.000	3.575
Central North Slope	0.000	0.000	3.250	2.200	0.950	0.000	6.400
West of NPRA	0.000	0.000	0.000	1.250	2.400	0.750	4.400

Note: Totals not provided due to range of assessment scenarios provided.

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**Contacts:** Murray Hitzman, Associate Director for Energy and Minerals, U.S. Geological Survey, mhitzman@usgs.gov, 703-648-4576  
Walter Guidroz, Energy Resources Program Coordinator, U.S. Geological Survey, [wguidroz@usgs.gov](mailto:wguidroz@usgs.gov), 703-648-6421

# Conversation Contents

subtle bathy option

**Attachments:**

/43. subtle bathy option/1.1 nsPage2.jpg

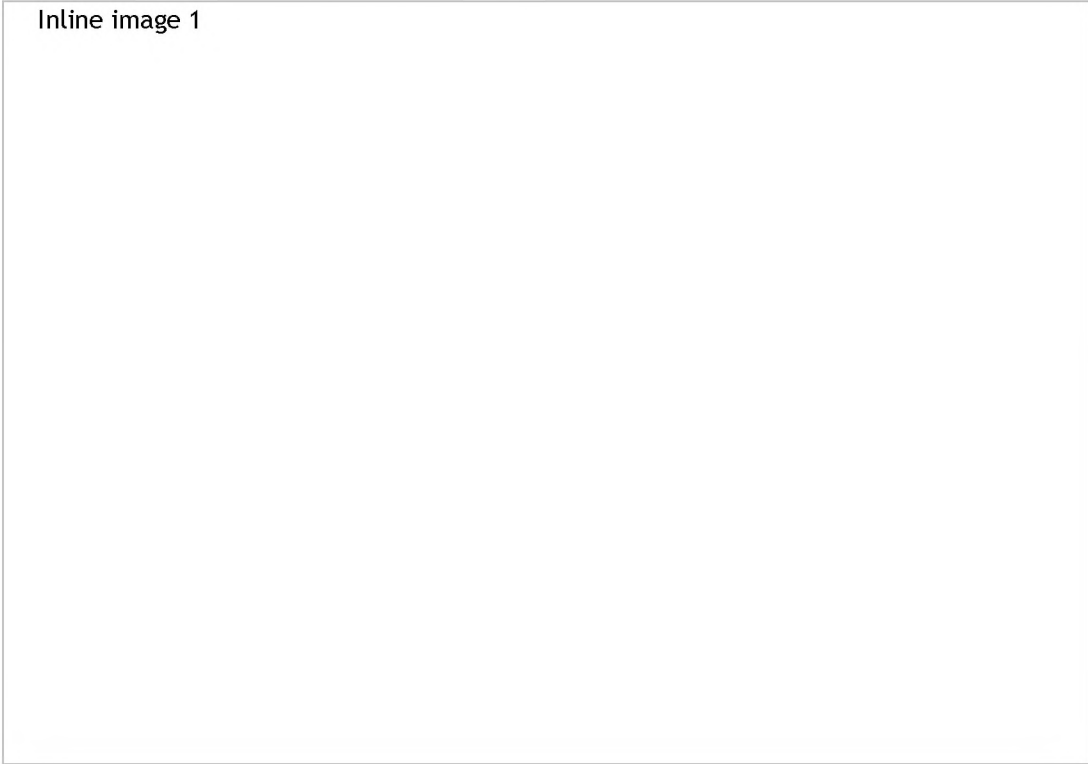
**"Garrity, Christopher" <cgarrity@usgs.gov>**

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**From:** "Garrity, Christopher" <cgarrity@usgs.gov>  
**Sent:** Wed Jun 14 2017 09:30:42 GMT-0600 (MDT)  
**To:** David Houseknecht <dhouse@usgs.gov>  
**Subject:** subtle bathy option  
**Attachments:** nsPage2.jpg

another option if current bath is too much...

Inline image 1



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-Chris

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[cgarrity@usgs.gov](mailto:cgarrity@usgs.gov) | [usgs.gov](http://usgs.gov)

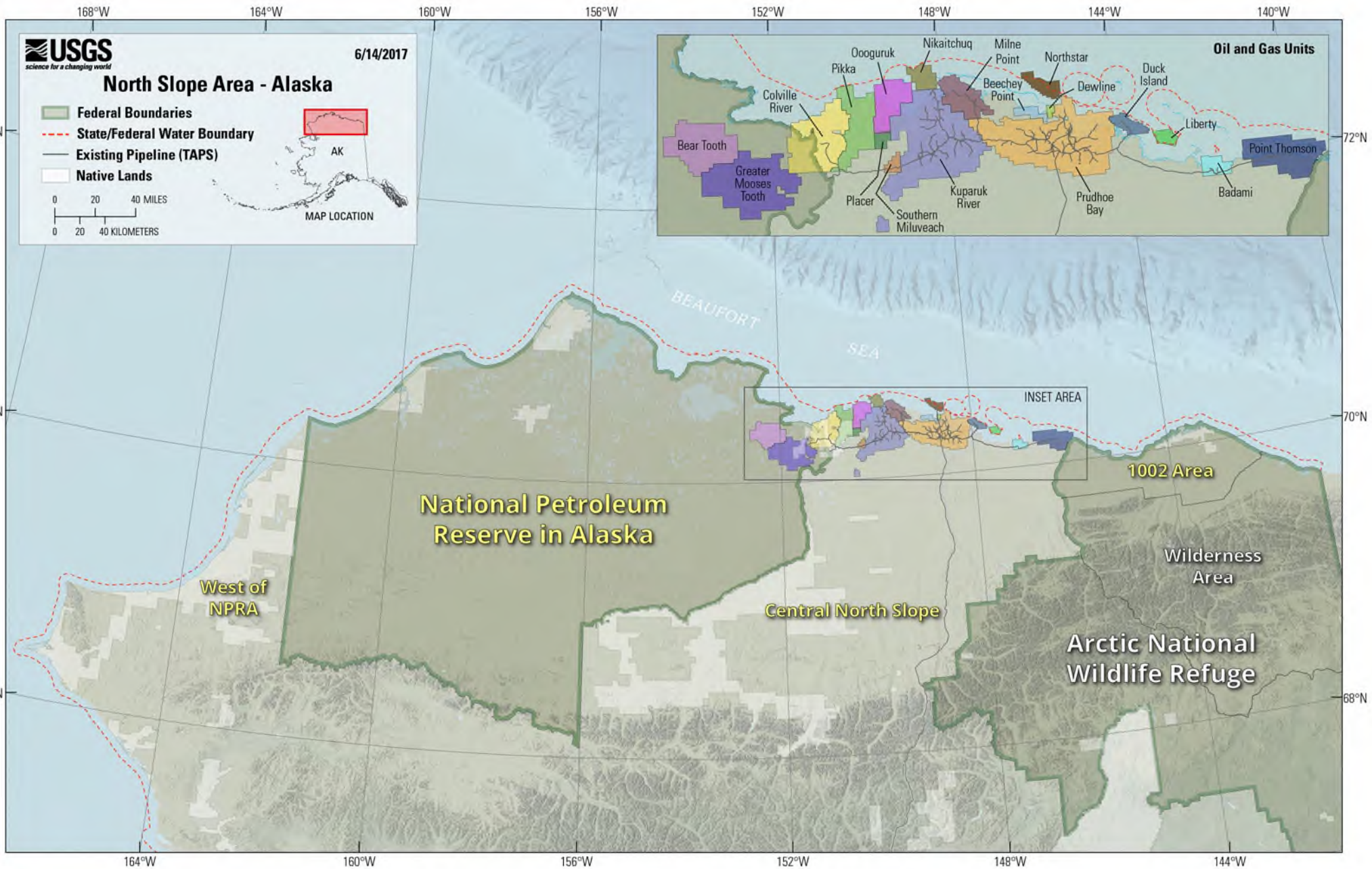


Figure 1. Map of Arctic Alaska showing oil and gas assessment areas (indicated by yellow text). Oil and gas units shown in inset map.

# Conversation Contents

draft

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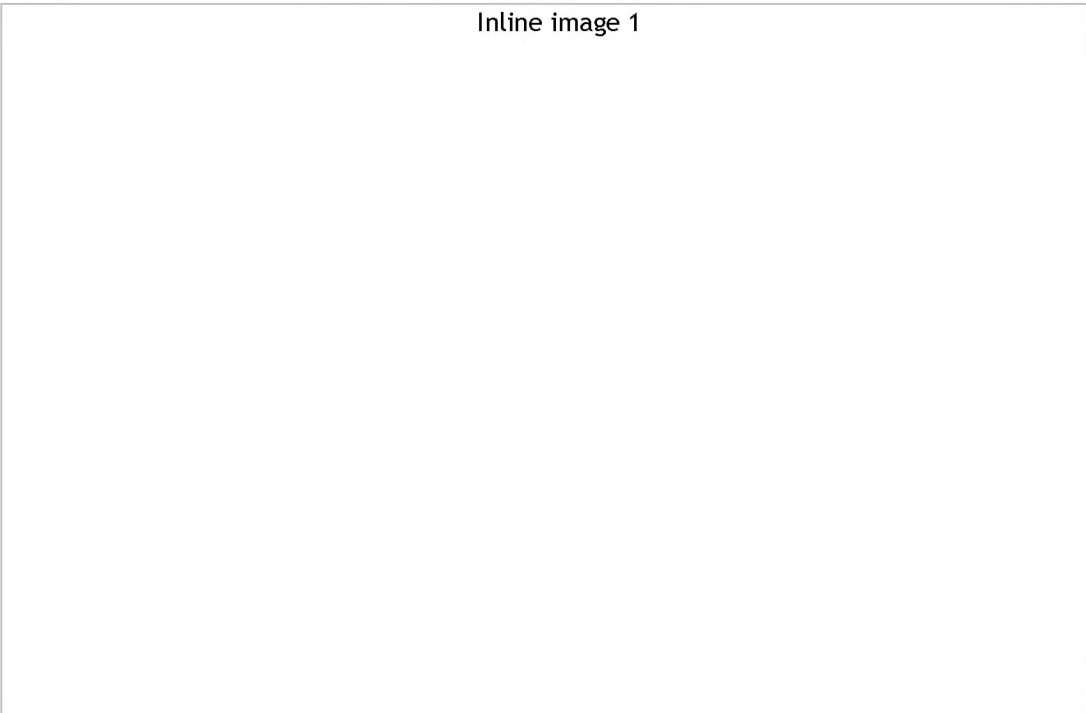
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**"Garrity, Christopher" <cgarrity@usgs.gov>**

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**From:** "Garrity, Christopher" <cgarrity@usgs.gov>  
**Sent:** Wed Jun 14 2017 09:14:34 GMT-0600 (MDT)  
**To:** David Houseknecht <dhouse@usgs.gov>  
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**Attachments:** nsPage.jpg

Inline image 1



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-Chris

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**"Houseknecht, David" <dhouse@usgs.gov>**

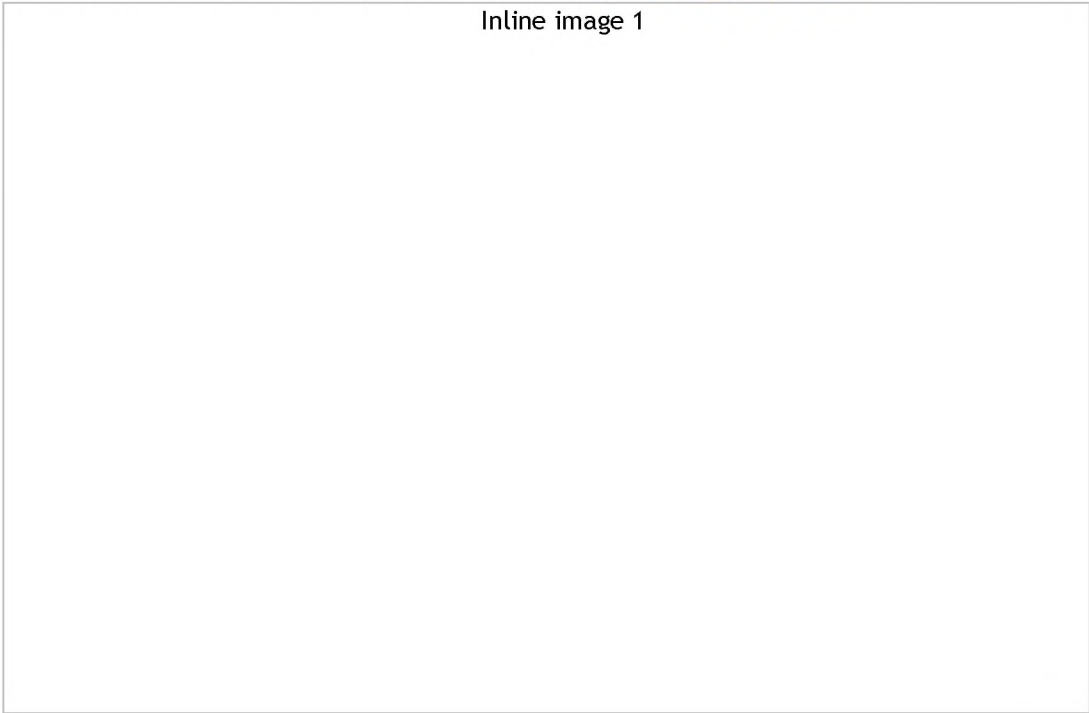
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good - send to WG

2017-06-14 11:14 GMT-04:00 Garrity, Christopher <[cgarrity@usgs.gov](mailto:cgarrity@usgs.gov)>:

Inline image 1



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-Chris

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[cgarrity@usgs.gov](mailto:cgarrity@usgs.gov) | [usgs.gov](http://usgs.gov)

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

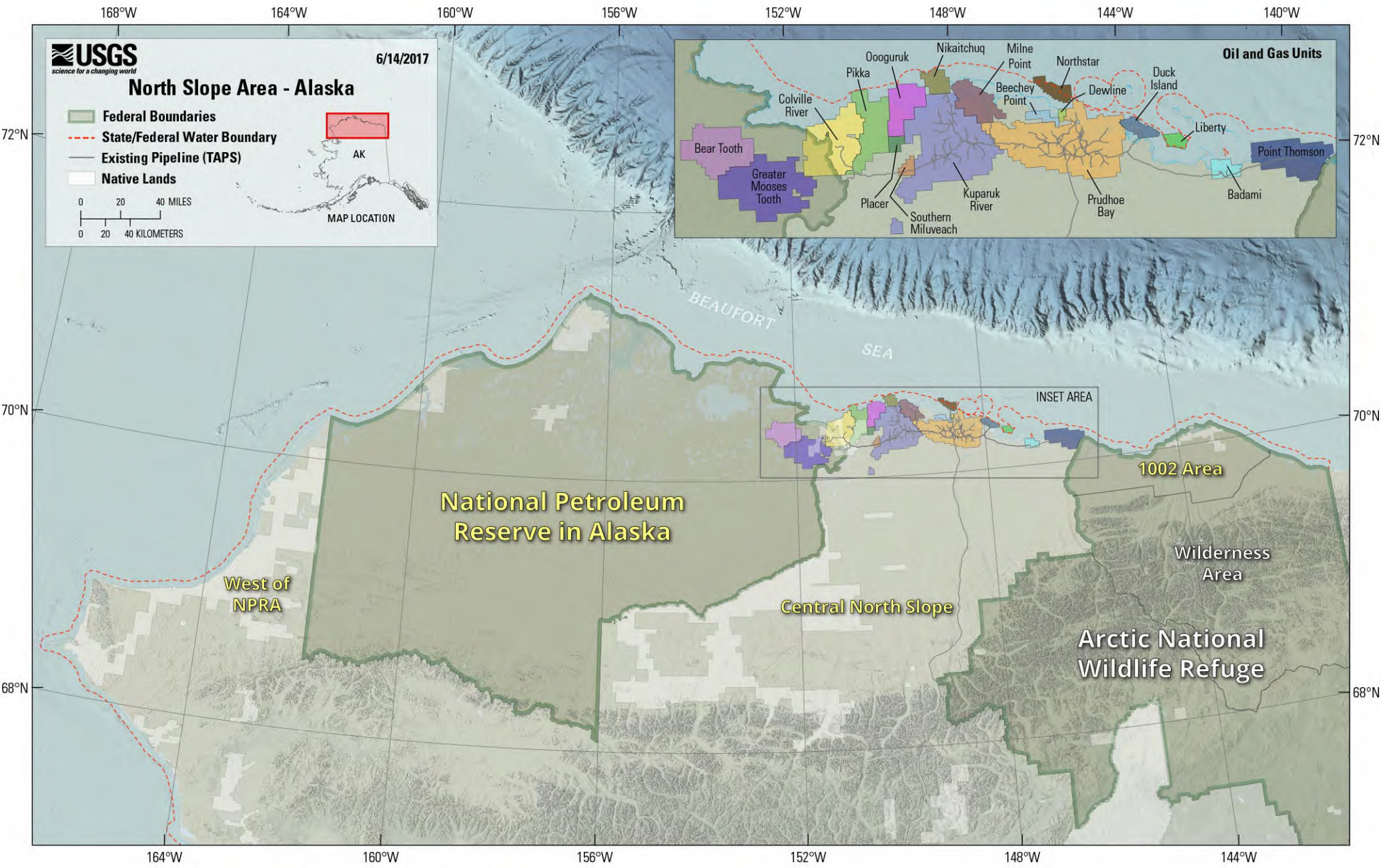


Figure 1. Map of Arctic Alaska showing oil and gas assessment areas (indicated by yellow text). Oil and gas units shown in inset map.

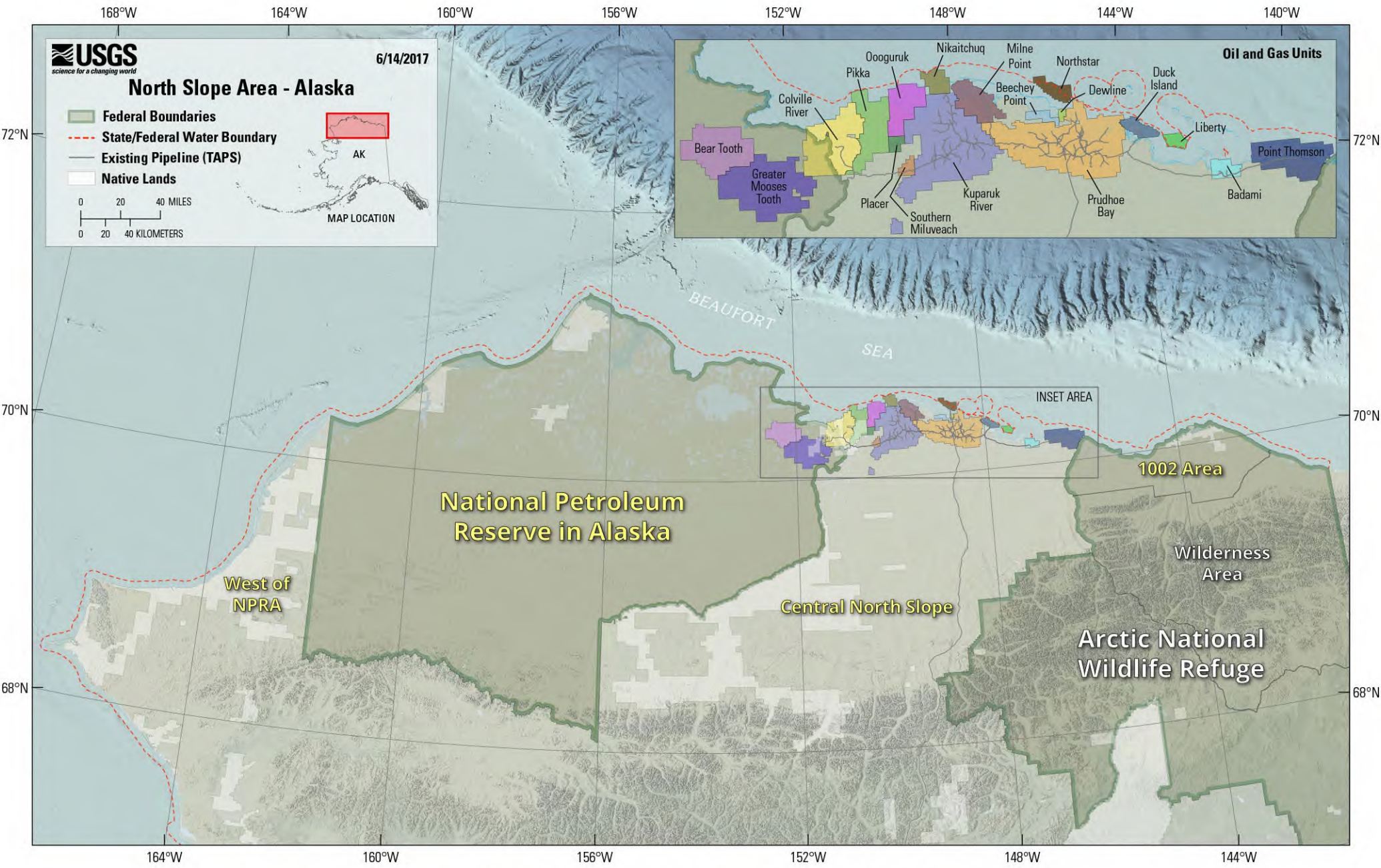


Figure 1. Map of Arctic Alaska showing oil and gas assessment areas (indicated by yellow text). Oil and gas units shown in inset map.

## Conversation Contents

map

**Attachments:**

/46. map/1.1 nsPageSize\_dh.jpg

---

**"Houseknecht, David" <dhouse@usgs.gov>**

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 16:50:28 GMT-0600 (MDT)  
**To:** Christopher Garrity <cgarrity@usgs.gov>  
**Subject:** map  
**Attachments:** nsPageSize\_dh.jpg

See attached. Can you add the labels for West of NPRA and Central North Slope in the morning? Also, we need to somehow identify the fields, which may be rather messy - could you make a legend box at upper left and make rectangles with the colors and label fields beside?

Also, reduce the vertical dimension - down to about center of existing legend box - so there is space below map for caption.

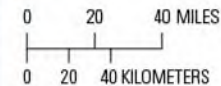
**(b) (6)** and will be in late - will have a look as soon as I arrive.

--  
Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

### North Slope Area - Alaska

6/13/2017

- Federal Boundaries
- AK Seaward Boundary
- Existing Pipeline (TAPS)



72°N

70°N

68°N

72°N

70°N

68°N

National Petroleum Reserve in Alaska

West of NPRA

Central North Slope

1002 Area

Wilderness Area

Arctic National Wildlife Refuge

# Conversation Contents

assessment plan

**Attachments:**

/47. assessment plan/1.1 USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg\_dh.docx

**"Houseknecht, David" <dhouse@usgs.gov>**

---

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 16:46:25 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** assessment plan  
**Attachments:** USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg\_dh.docx

I accepted all your changes and found only two items for which I have questions, both in the "Key Takeaways" section - they are highlighted in yellow.

1. This statement does not specify that the USGS will not procure the reprocessing and we no longer have that cost in the budget.
2. Is there something missing in the final bullet - I do not understand the sentence. Does he mean "would need to secure additional funding?"

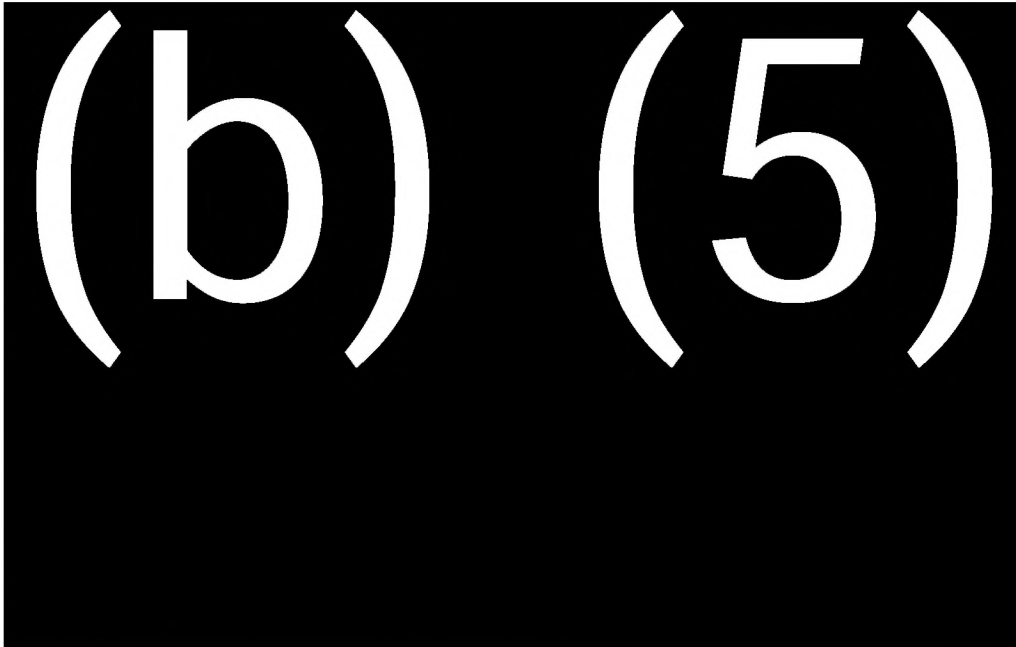
--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

**DATE:** June 13, 2017  
**TO:** Vincent DeVito, Department of Interior Energy Counselor  
**FROM:** William H. Werkheiser, Acting Director, U.S. Geological Survey  
**SUBJECT:** Alaska North Slope Assessment Proposal (S.O. 3352)

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope, focusing on Federal lands including the National Petroleum Reserve in Alaska (NPRA) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

**KEY TAKEAWAYS**



(b) (5)

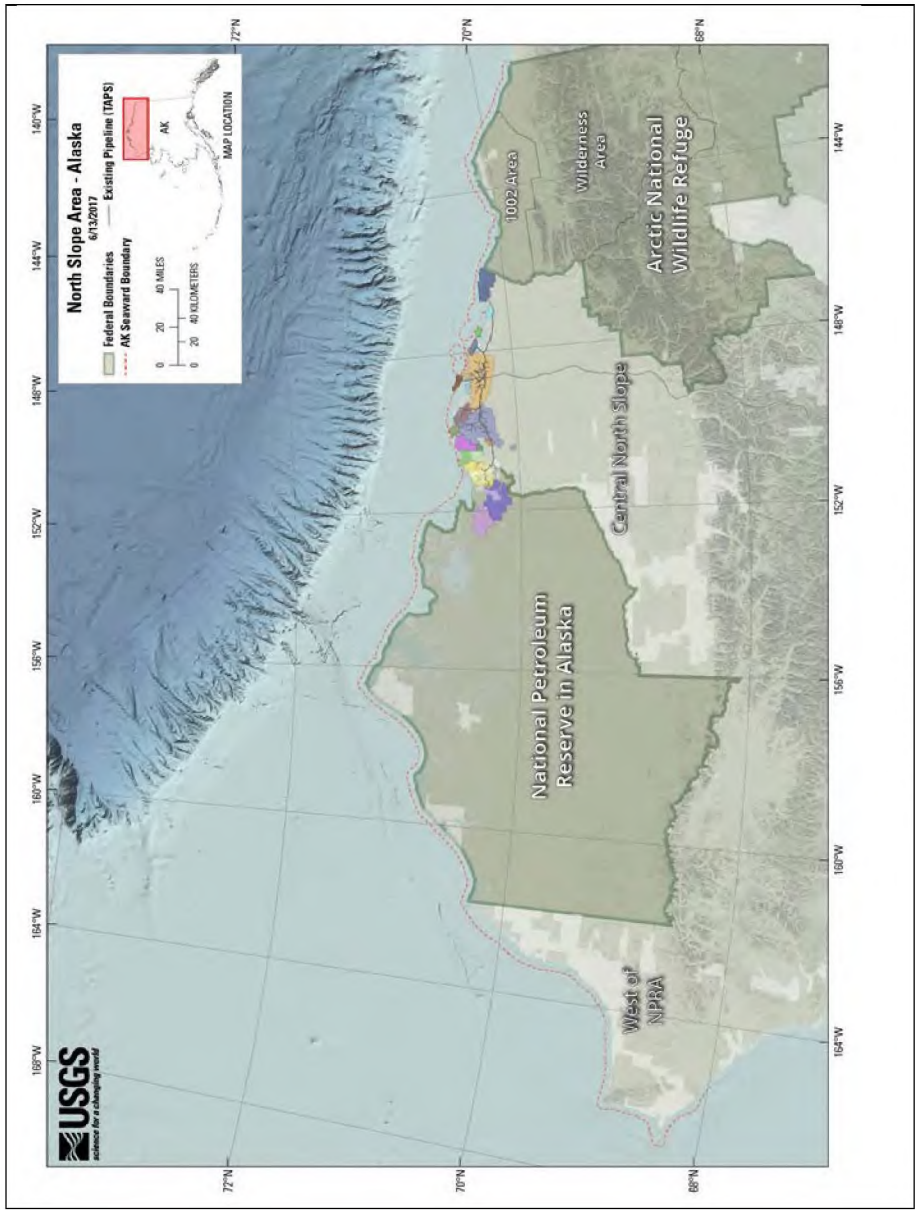


Figure 1: Base map of Alaska North Slope

(b) (5)

(b) (5)

**PROPOSED NORTH SLOPE ASSESSMENTS:**

**National Petroleum Reserve – Alaska (NPRA)**

(b) (5)

**Figure 2: Estimated completion timeline for NPRA Resource Assessment**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■	■										
Refine interpretations of seismic and well data		■	■									
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review				■								
Release assessment												
Hold briefings for Admin., Congress, State et al.												

(b) (5)

(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2-D data) *				█	█	█						
Review technical data and interpret seismic data					█	█						
Refine interpretations of seismic and well data						█	█					
Define AUs; prepare for public review & assessment							█	█				
Conduct public review meetings								█				
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review									█			
Release assessment												
Hold briefings for Admin., Congress, State, et al.												█

\* USGS does not procure reprocessed vintage 2-D seismic data, but provides geological and geophysical advice to seismic vendor.

(b) (5)

(b) (5)

Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3-D seismic survey and processing of data *				[Orange bar]								
Review technical data and interpret seismic data					[Blue bar]							
Refine interpretations of seismic and well data									[Blue bar]			
Define AUs; prepare for public review & assessment										[Blue bar]		
Conduct public review meetings											[Blue bar]	
Conduct assessment												
Prepare release document (fact sheet)												[Blue bar]
Conduct technical and editorial review												[Blue bar]
Release assessment												
Hold briefings for Admin., Congress, State, et al.												[Blue bar]

\* USGS plays no role in designing or acquiring a 3-D seismic survey.

Central North Slope

(b) (5)

Figure 5: Estimated completion timeline for Central North Slope Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire (license) existing 2-D/3-D seismic data			■	■								
Review technical data and interpret seismic data				■	■							
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment												■
Prepare release document (fact sheet)												■
Conduct technical and editorial review												■
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

West of NPRA

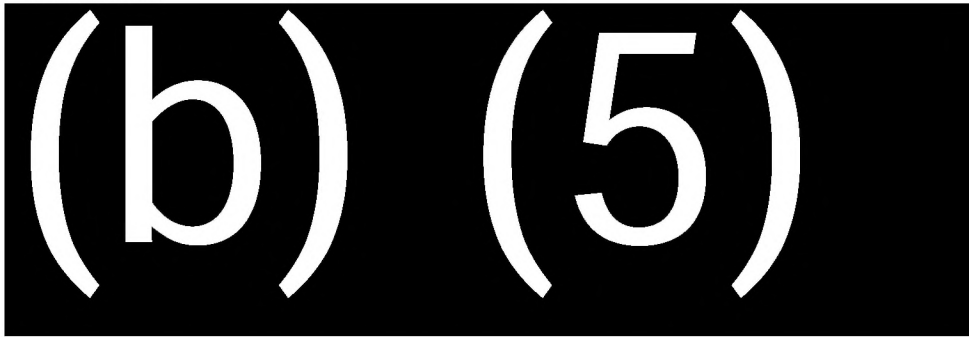


Figure 6: Estimated completion timeline for West of NPRA Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2-D/3-D seismic data							■	■				
Review technical data and interpret seismic data								■	■			
Refine interpretations of seismic and well data									■	■		
Define AUs; prepare for public review & assessment										■	■	
Conduct public review meetings											■	
Conduct assessment												■
Prepare release document (fact sheet)												■
Conduct technical and editorial review												■
Release assessment												



# Conversation Contents

**USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg**

**Attachments:**

/48. USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg/1.1 USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg.docx

**Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>**

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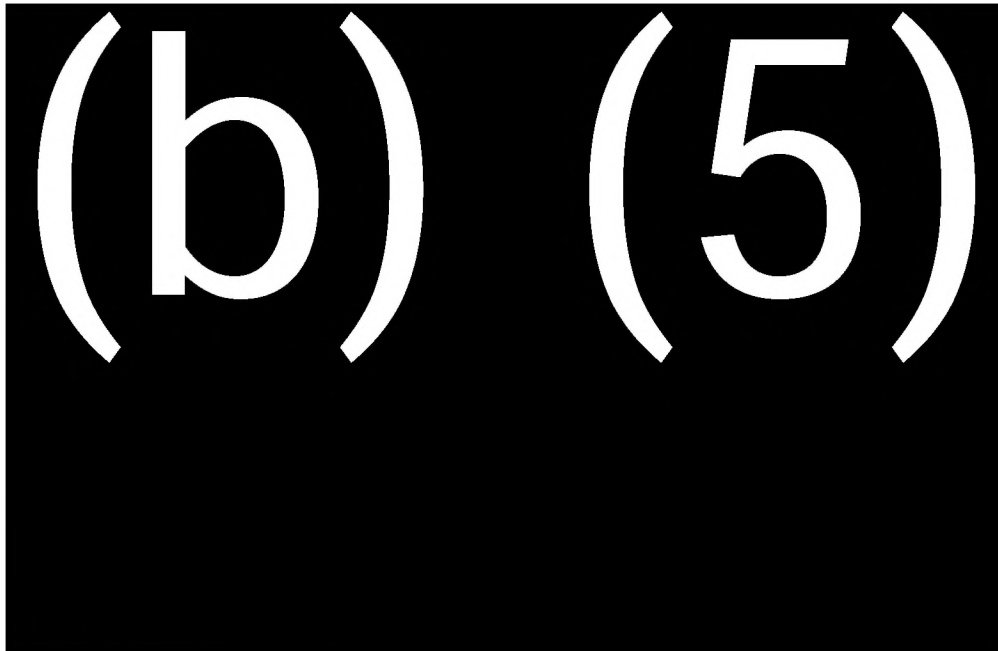
**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Tue Jun 13 2017 15:15:45 GMT-0600 (MDT)  
**To:** "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg  
**Attachments:** USGS Resource Assessment Prop - Alaska North Slope 6-13-17 wg.docx

Here you go; my changes are in track changes (Murray didn't use that when he did his edits)

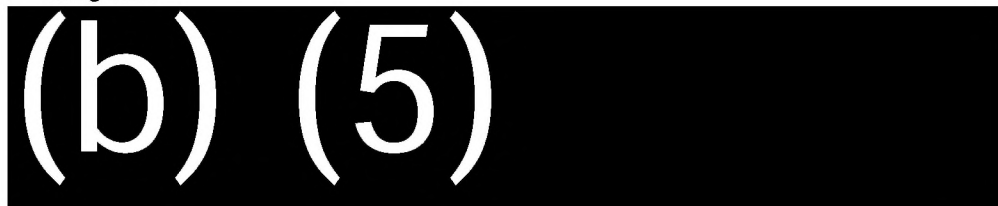
**DATE:** June 13, 2017  
**TO:** Vincent ~~DeDito~~DeVito, Department of Interior Energy Counselor  
**FROM:** William H. Werkheiser, Acting Director, U.S. Geological Survey  
**SUBJECT:** Alaska North Slope Assessment Proposal (S.O. 3352)

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope, focusing on Federal lands including the National Petroleum Reserve in Alaska (NPRA) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

**KEY TAKEAWAYS**



Background



(b) (5)

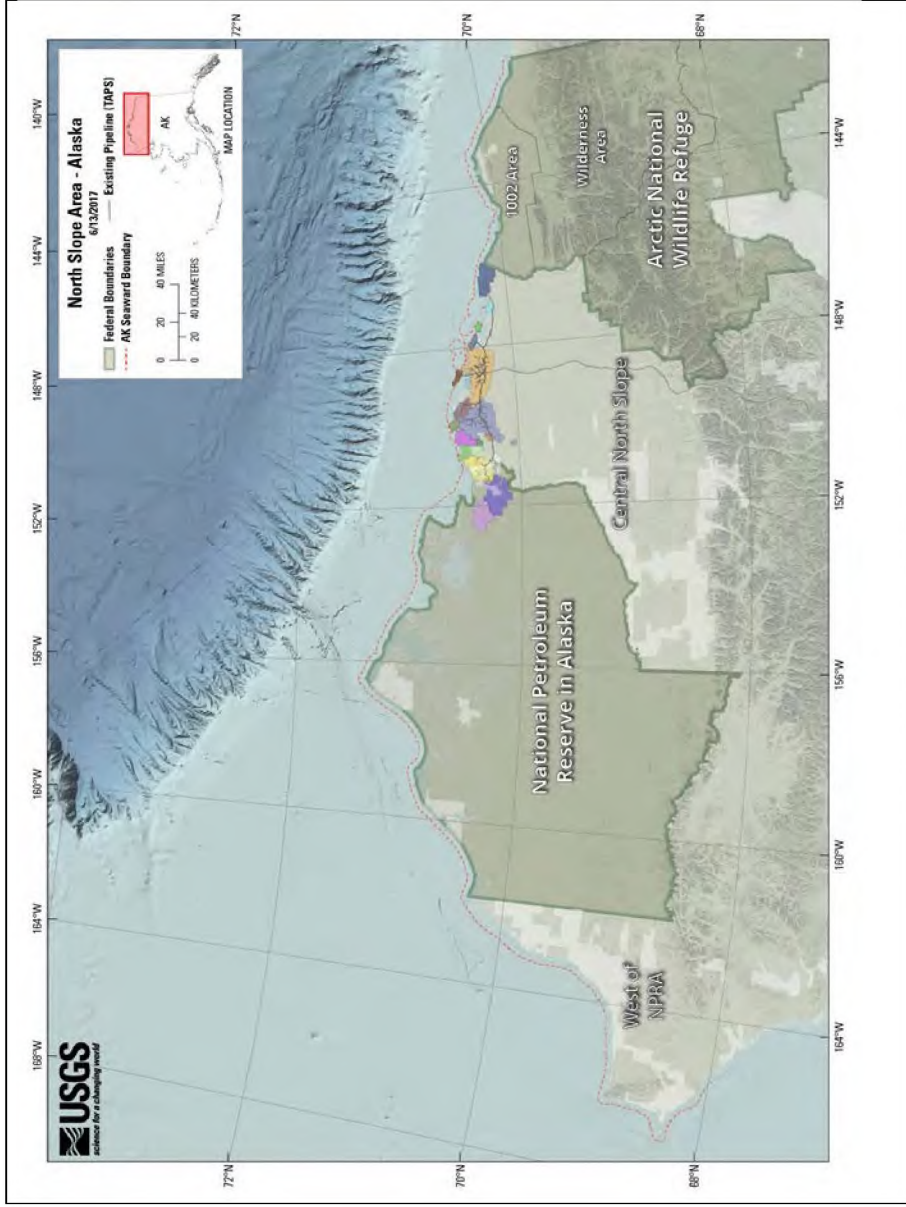
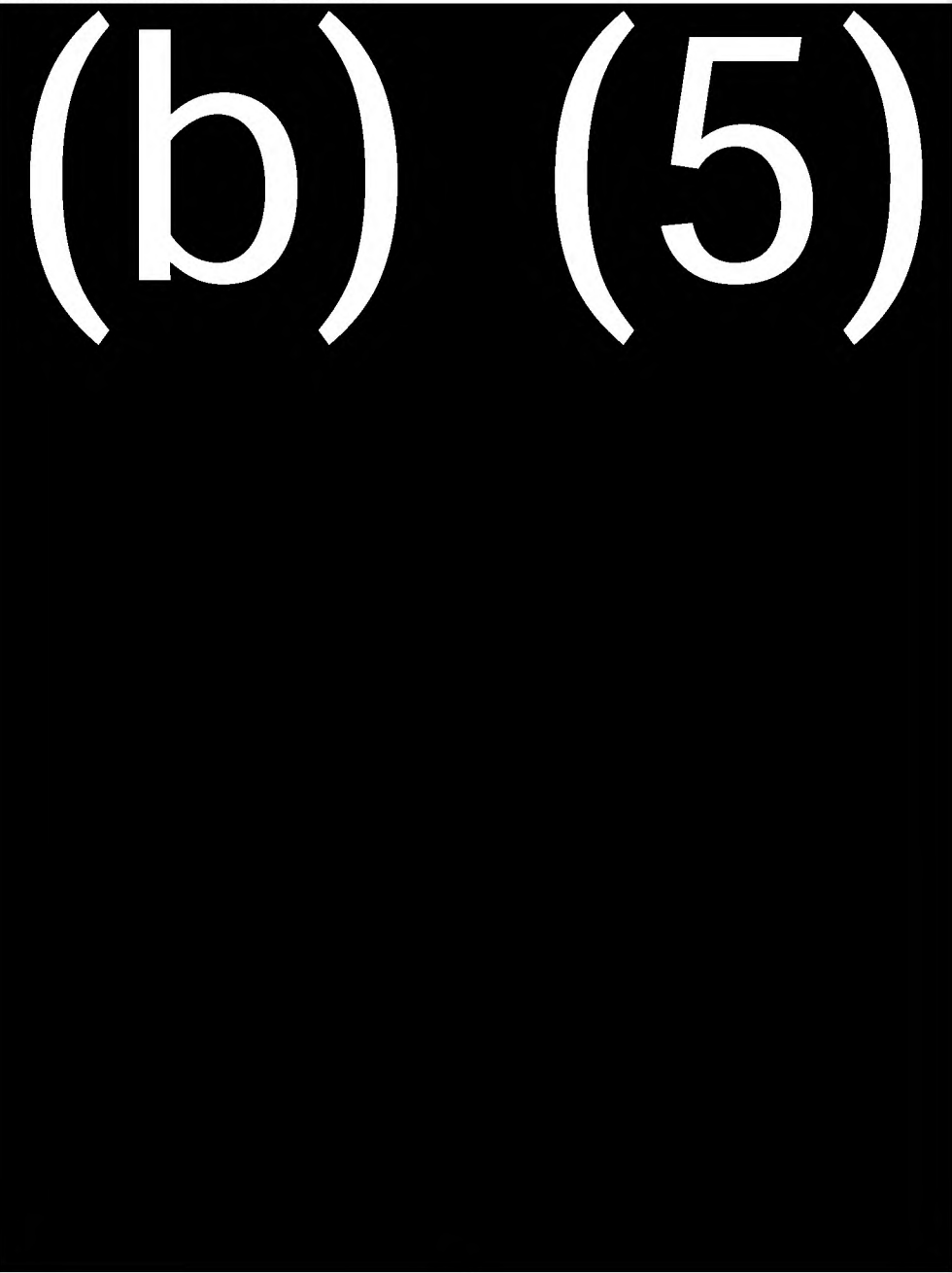


Figure 1: Base map of Alaska North Slope



(b) (5)

**PROPOSED NORTH SLOPE ASSESSMENTS:**

**National Petroleum Reserve – Alaska (NPRA)**

(b) (5)

**Figure 2: Estimated completion timeline for NPRA Resource Assessment**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data		■	■									
Refine interpretations of seismic and well data			■	■								
Define AUs; prepare for public review & assessment				■								
Conduct public review meetings				■								
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review				■								
Release assessment												
Hold briefings for Admin., Congress, State et al.												

(b) (5)

(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2-D data) *				█	█	█						
Review technical data and interpret seismic data					█	█						
Refine interpretations of seismic and well data						█	█					
Define AUs; prepare for public review & assessment							█	█				
Conduct public review meetings								█				
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review									█			
Release assessment												
Hold briefings for Admin., Congress, State, et al.												█

\* USGS does not procure reprocessed vintage 2-D seismic data, but provides geological and geophysical advice to seismic vendor.

(b) (5)

(b) (5)

Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3-D seismic survey and processing of data *				[Orange bar]								
Review technical data and interpret seismic data						[Blue bar]						
Refine interpretations of seismic and well data									[Blue bar]			
Define AUs; prepare for public review & assessment										[Blue bar]		
Conduct public review meetings											[Blue bar]	
Conduct assessment												
Prepare release document (fact sheet)												[Blue bar]
Conduct technical and editorial review												[Blue bar]
Release assessment												
Hold briefings for Admin., Congress, State, et al.												[Blue bar]

\* USGS plays no role in designing or acquiring a 3-D seismic survey.

Central North Slope

(b) (5)

Figure 5: Estimated completion timeline for Central North Slope Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire (license) existing 2-D/3-D seismic data			■	■								
Review technical data and interpret seismic data				■	■	■						
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment												
Prepare release document (fact sheet)								■				
Conduct technical and editorial review								■				
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

West of NPRA

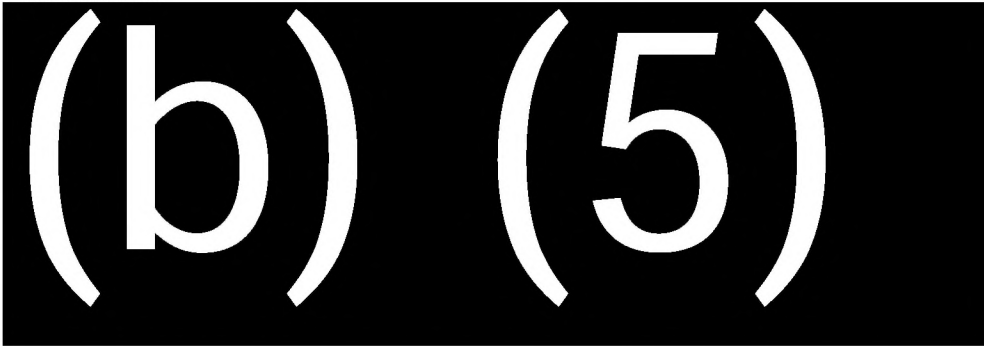


Figure 6: Estimated completion timeline for West of NPRA Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2-D/3-D seismic data							■	■				
Review technical data and interpret seismic data								■	■			
Refine interpretations of seismic and well data									■	■		
Define AUs; prepare for public review & assessment										■	■	
Conduct public review meetings											■	
Conduct assessment												■
Prepare release document (fact sheet)												
Conduct technical and editorial review												■
Release assessment												



## Conversation Contents

map

**Attachments:**

/49. map/1.1 nsPageSize\_dh.jpg

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### "Houseknecht, David" <dhouse@usgs.gov>

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 11:01:43 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** map  
**Attachments:** nsPageSize\_dh.jpg

This is low resolution as Chris sent me a jpg and I added text, which is why some fonts don't match. We will finalize this in the morning and output a high-resolution version.

Also need to label oil fields, and reduce N-S extent so it has less ocean and space for caption.

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

---

### Walter Guidroz <wguidroz@usgs.gov>

**From:** Walter Guidroz <wguidroz@usgs.gov>  
**Sent:** Tue Jun 13 2017 12:33:16 GMT-0600 (MDT)  
**To:** David Houseknecht <dhouse@usgs.gov>  
**Subject:** RE: map

Got it; just sent a draft to Murray and cc'd you. I'll let you know what he comes back with.

**From:** Houseknecht, David [mailto:[dhouse@usgs.gov](mailto:dhouse@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 1:02 PM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** map

This is low resolution as Chris sent me a jpg and I added text, which is why some fonts don't match. We will finalize this in the morning and output a high-resolution version.

Also need to label oil fields, and reduce N-S extent so it has less ocean and space for caption.

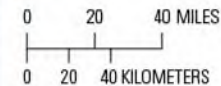
--

Dave Houseknecht  
U.S. Geological Survey  
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Reston, VA 20192  
(703) 648-6466

### North Slope Area - Alaska

6/13/2017

- Federal Boundaries
- Existing Pipeline (TAPS)
- AK Seaward Boundary



72°N

70°N

68°N

72°N

70°N

68°N

National Petroleum Reserve in Alaska

West of NPRA

Central North Slope

1002 Area

Wilderness Area

Arctic National Wildlife Refuge



# Conversation Contents

proposal v2

**Attachments:**

/50. proposal v2/1.1 USGS Resource Assessment Proposal - Alaska North Slope V2\_dh.docx

**"Houseknecht, David" <dhouse@usgs.gov>**

---

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 09:10:06 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** proposal v2  
**Attachments:** USGS Resource Assessment Proposal - Alaska North Slope V2\_dh.docx

Here are my edits.

Note that I removed the reprocessing and AGG funds from the ANWR scenario 2 budget, and added words to reinforce the point that ASLM is responsible for either or both.

Garrity is making good progress on map, so we should see it soon.

Another point: At the end of my conference call with BOEM last Thursday, I told them I would send a draft to them and to BLM for review on Friday or Monday. However, Murray nixed that idea in our Friday am meeting. Yesterday, I phoned BOEM and told them I had orders not to send draft until later in week. They clearly did not understand that because their understanding is the this was supposed to be an interagency plan. Considering that we need them to be fully collaborative and that we can't do NPRA without access to the data they archive and their interpretations, I want to send them a draft as soon as we are comfortable with it. So, if you talk to Murray, chat about this and let me know when I can send.

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

**USGS Resource Assessment Proposal  
Alaska North Slope  
June 12, 2017**

**Introduction**

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope (Figure 1), focusing on Federal lands including the National Petroleum Reserve in Alaska (NPRA) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

(b) (5)

**Current Alaska North Slope Assessments**

(b) (5)

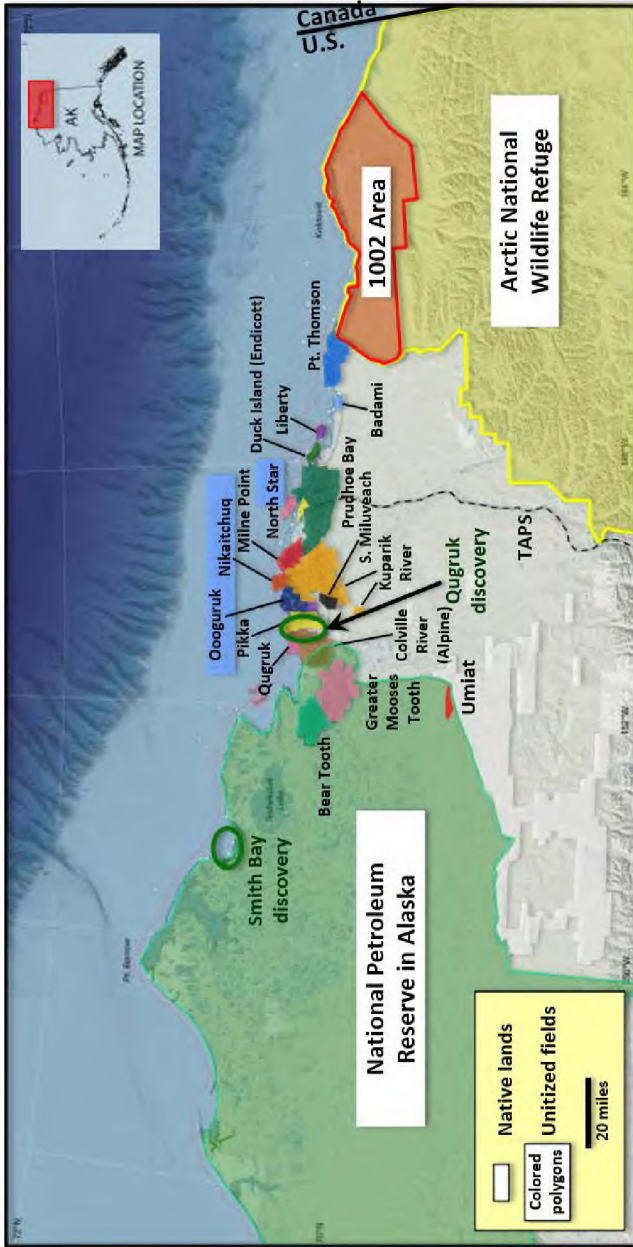


Figure 1: Base map of Alaska North Slope

(b) (5)

Generalized Assessment Workflow

(b) (5)

(b) (5)

Commented [DWH1]:(b) (5)

**Table 1: Cost information, Alaska North Slope Assessment Options (numbers in millions of dollars)**

Assessment	FY17	FY18	FY19	FY20	FY21	FY22	Total
National Petroleum Reserve – Alaska	(b)	(5)	(5)	(5)	(5)	(5)	(5)
Alaska National Wildlife Refuge							
ANWR – Option 1							
ANWR – Option 2							
ANWR – Option 3							
Central North Slope							
West of NPRA							

Note: Totals not provided due to range of assessment scenarios provided

Commented [DWH2]:(b) (5)

National Petroleum Reserve – Alaska (NPRA)



Figure 2: Estimated completion timeline for NPRA Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■	■										
Refine interpretations of seismic and well data		■	■									
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment												
Prepare release document (fact sheet)												
Conduct technical and editorial review				■								
Release assessment												
Hold briefings for Admin., Congress, State et al.												

(b) (5)

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(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

(b) (5)

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(b) (5)

Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)

(b) (5)

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Central North Slope



Figure 5: Estimated completion timeline for Central North Slope Resource Assessment



West of NPRA

(b) (5)

Figure 6: Estimated completion timeline for West of NPRA Resource Assessment

(b) (5)

# Conversation Contents

assessment plan

## Attachments:

/51. assessment plan/2.1 USGS Resource Assessment Proposal - Alaska North Slope V2.docx

**"Houseknecht, David" <dhouse@usgs.gov>**

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**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 05:14:56 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** assessment plan

One, and perhaps two things that I think need to be revised:

1. In ANWR Scenario 3, we should change the color of the top bar on the timeline to emphasize that the USGS will have no role in design or collection of the 3D survey. I inserted words last night (not procured or managed by USGS), but changing the bar color is essential to draw attention to that.

2. In ANWR Scenario 2, I'm really torn whether or not we should do the same thing with procurement of the reprocessed vintage 2D data. I really do not want to do that because it would consume time of technical staff (likely me) and admin staff that we really can't afford. On the other hand, I'm concerned that it may not happen if we do not do it. What are your thoughts on this?

If we decide we do not want to do it, we should change the color of that bar in timeline and insert words as with scenario 3. I emphasized to Kate MacGregor that this needs to be done by DOI or BLM (this is more likely), but she has a lot on her plate and I don't have a feel with what her perspective is on this.

Will work on a map shortly.

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

**Walter Guidroz <wguidroz@usgs.gov>**

---

**From:** Walter Guidroz <wguidroz@usgs.gov>  
**Sent:** Tue Jun 13 2017 06:53:19 GMT-0600 (MDT)

**To:** David Houseknecht <dhouse@usgs.gov>  
**Subject:** RE: assessment plan  
**Attachments:** USGS Resource Assessment Proposal - Alaska North Slope V2.docx

Dave, please see attached for Version 2 (see track changes). I've incorporated all your suggestions and I've added a bit, mainly around redirecting funds within the Alaska Project (could you please fill in what you can here) as well as pointing out that certain funds within the Alaska project support tasks that would help underpin any assessments carried out. I also changed the verbiage on the timelines (third item from the bottom with respect to technical and editorial review) to read 'conduct' rather than 'hole' (you changed that on the first timeline; I changed them on the rest to be consistent).

Re: Scenario 3, I've changed the color of the top bar on the timeline and I inserted a note under the timeline to reference that we'd have no role in designing or collecting a 3D survey.

Re: Scenario 2, I've changed the color of the top bar on the timeline and inserted language here too. I think I'd rather point out that we'd get someone else to work on the reprocessed data; we'll just have to make sure it gets done. I'd rather pursue it that way rather than overload overworked staff (you??) to try and get this done in a timely way.

If you have a map you like, you can just send it to me and I can incorporate it.

Thanks again for all your help!!!! Much appreciated...

Walter

**From:** Houseknecht, David [mailto:[dhouse@usgs.gov](mailto:dhouse@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 7:15 AM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** assessment plan

One, and perhaps two things that I think need to be revised:

1. In ANWR Scenario 3, we should change the color of the top bar on the timeline to emphasize that the USGS will have no role in design or collection of the 3D survey. I inserted words last night (not procured or managed by USGS), but changing the bar color is essential to draw attention to that.
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Will work on a map shortly.

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

---

**"Houseknecht, David" <dhouse@usgs.gov>**

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Tue Jun 13 2017 07:02:13 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** Re: assessment plan

Will review this immediately.

Garrity is generating map - we need to go all the way to Chukchi coast and Canada border to show all assessment areas, so none of the recently prepared maps do the job. He'll have it ready soon.

On Tue, Jun 13, 2017 at 8:53 AM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

Dave, please see attached for Version 2 (see track changes). I've incorporated all your suggestions and I've added a bit, mainly around redirecting funds within the Alaska Project (could you please fill in what you can here) as well as pointing out that certain funds within the Alaska project support tasks that would help underpin any assessments carried out. I also changed the verbiage on the timelines (third item from the bottom with respect to technical and editorial review) to read 'conduct' rather than 'hole' (you changed that on the first timeline; I changed them on the rest to be consistent).

Re: Scenario 3, I've changed the color of the top bar on the timeline and I inserted a note under the timeline to reference that we'd have no role in designing or collecting a 3D survey.

Re: Scenario 2, I've changed the color of the top bar on the timeline and inserted language here too. I think I'd rather point out that we'd get someone else to work on the reprocessed data; we'll just have to make sure it gets done. I'd rather pursue it that way rather than overload overworked staff (you??) to try and get this done in a timely way.

If you have a map you like, you can just send it to me and I can incorporate it.

Thanks again for all your help!!!! Much appreciated...

Walter

**From:** Houseknecht, David [mailto:[dhouse@usgs.gov](mailto:dhouse@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 7:15 AM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** assessment plan

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Dave Houseknecht

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MS 956  
Reston, VA 20192  
(703) 648-6466

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

## **Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>**

---

**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Tue Jun 13 2017 07:03:53 GMT-0600 (MDT)  
**To:** David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: assessment plan

Great; thanks...

**From:** Houseknecht, David [mailto:[dhouse@usgs.gov](mailto:dhouse@usgs.gov)]  
**Sent:** Tuesday, June 13, 2017 9:02 AM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
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Reston, VA 20192  
(703) 648-6466

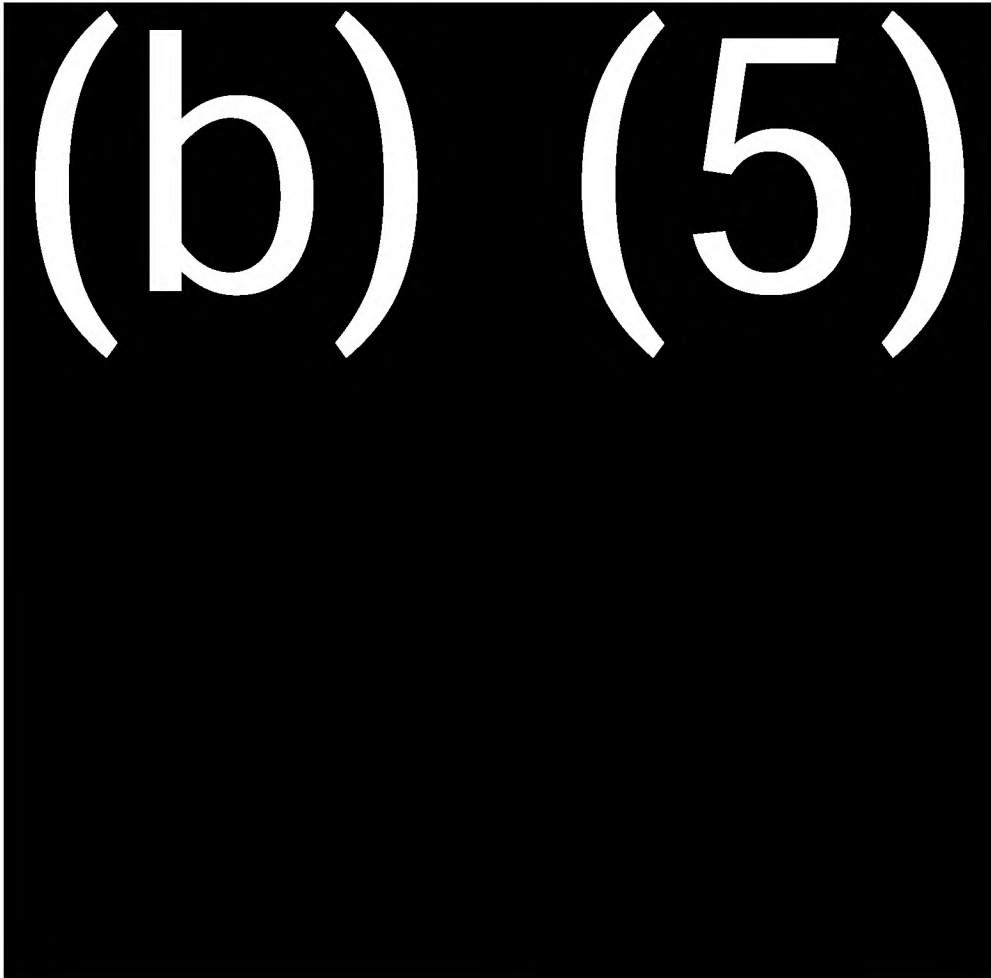
--

Dave Houseknecht  
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Reston, VA 20192  
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**USGS Resource Assessment Proposal  
Alaska North Slope  
June 12, 2017**

**Introduction**

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope (Figure 1), focusing on Federal lands including the National Petroleum Reserve in Alaska (NPRA) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).



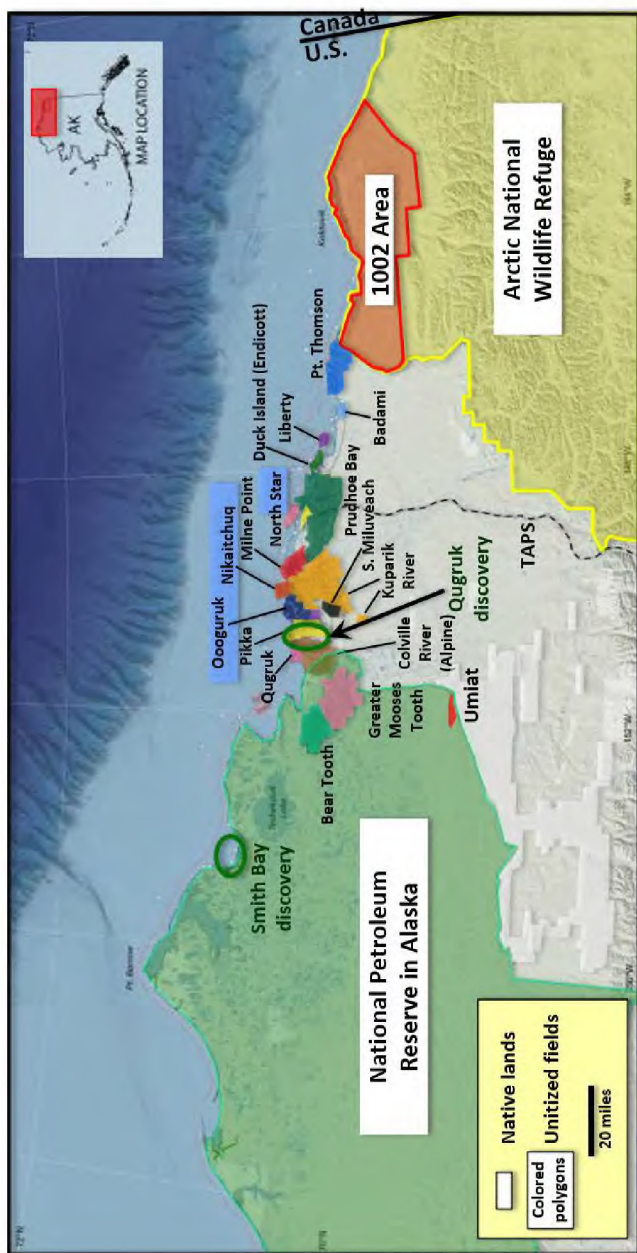


Figure 1: Base map of Alaska North Slope

(b) (5)

(b) (5)

**Table 1: Cost information, Alaska North Slope Assessment Options (numbers in millions of dollars)**

<b>Assessment</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
National Petroleum Reserve – Alaska	<b>(b)</b>	<b>(5)</b>	<b>(5)</b>	<b>(5)</b>	<b>(5)</b>	<b>(5)</b>	<b>(5)</b>
Alaska National Wildlife Refuge							
ANWR – Option 1							
ANWR – Option 2							
ANWR – Option 3							
Central North Slope							
West of NPRA							

Note: Totals not provided due to range of assessment scenarios provided

National Petroleum Reserve – Alaska (NPRA)



Figure 2: Estimated completion timeline for NPRA Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	█	█										
Refine interpretations of seismic and well data		█	█									
Define AUs; prepare for public review & assessment			█									
Conduct public review meetings				█								
Conduct assessment				█								
Prepare release document (fact sheet)												
Conduct technical and editorial review				█								
Release assessment												
Hold briefings for Admin., Congress, State et al.												

(b) (5)

(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
(b) (5)												

Formatted: List Paragraph, Indent: Left: 0.06", Hanging: 0.13", Bulleted + Level: 1 + Aligned at: 0.06" + Indent at: 0.31"

(b) (5)

Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q

(b) (5)

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Central North Slope

(b) (5)

Figure 5: Estimated completion timeline for Central North Slope Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
(b) (5)												

West of NPRA

(b) (5)

Figure 6: Estimated completion timeline for West of NPRA Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q

(b) (5)

# Conversation Contents

assessment doc

**Attachments:**

/52. assessment doc/1.1 USGS Resource Assessment Proposal - Alaska North Slope V1\_dh.docx

**"Houseknecht, David" <dhouse@usgs.gov>**

---

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Mon Jun 12 2017 18:47:13 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** assessment doc  
**Attachments:** USGS Resource Assessment Proposal - Alaska North Slope V1\_dh.docx

Here is an edited version of your doc in track changes. Tomorrow morning, I will have another look and insert a map that shows all areas proposed for assessment, including "west of NPRA."

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

**USGS Resource Assessment Proposal  
Alaska North Slope  
June 12, 2017**

**Introduction**

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope (Figure 1), focusing on Federal lands including the National Petroleum Reserve in Alaska (NPRA) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

(b) (5)

(b) (5)

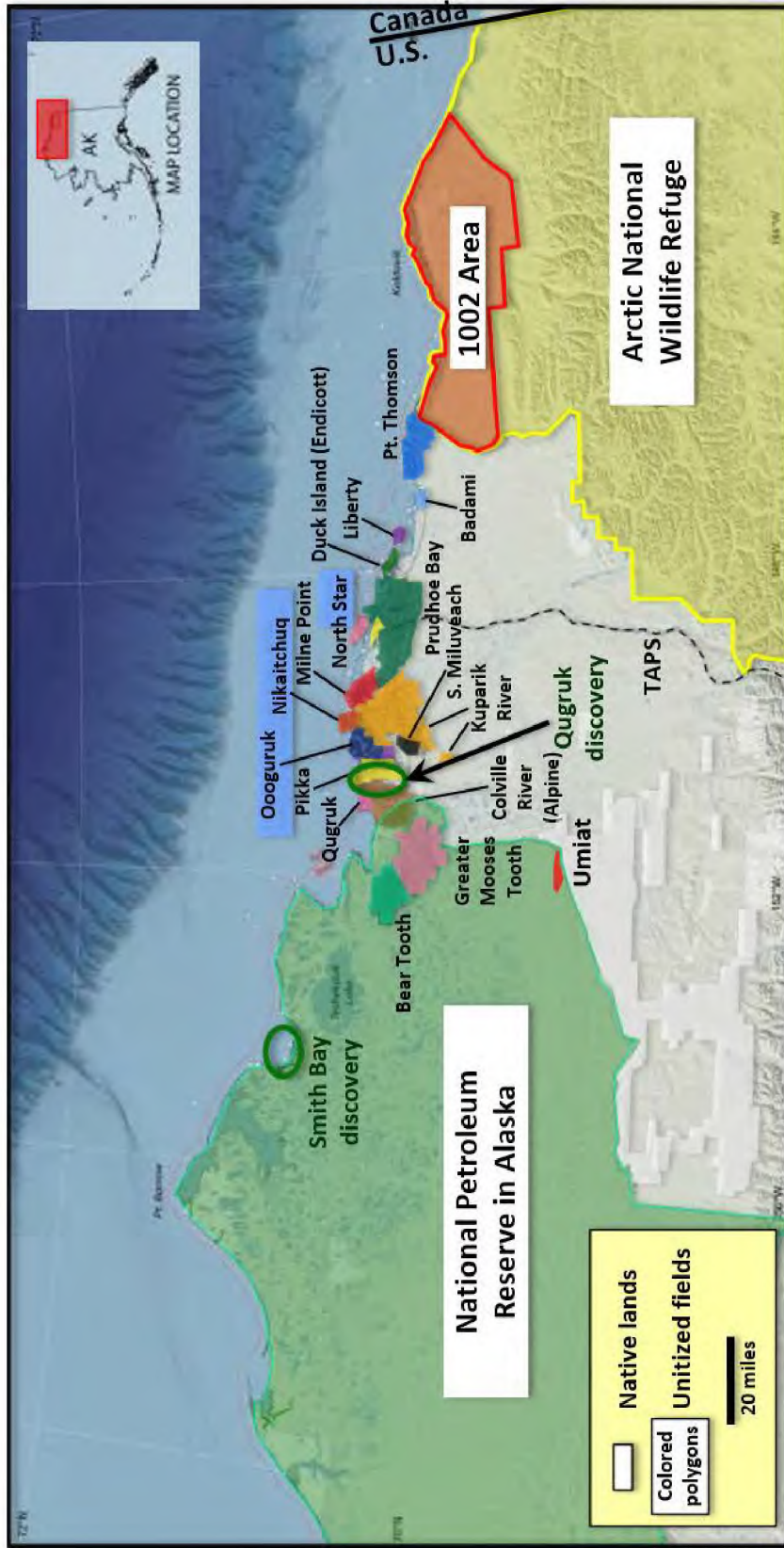


Figure 1: Base map of Alaska North Slope

(b) (5)

Generalized Assessment Workflow

(b) (5)

(b) (5)

(b) (5)

Assessment	FY17	FY18	FY19	FY20	FY21	FY22	Total
National Petroleum Reserve – Alaska	(b)	(5)					
Alaska National Wildlife Refuge							
ANWR – Option 1							
ANWR – Option 2							
ANWR – Option 3							
Central North Slope							
West of NPRA							

Note: Totals not provided due to range of assessment scenarios provided

National Petroleum Reserve – Alaska (NPRA)

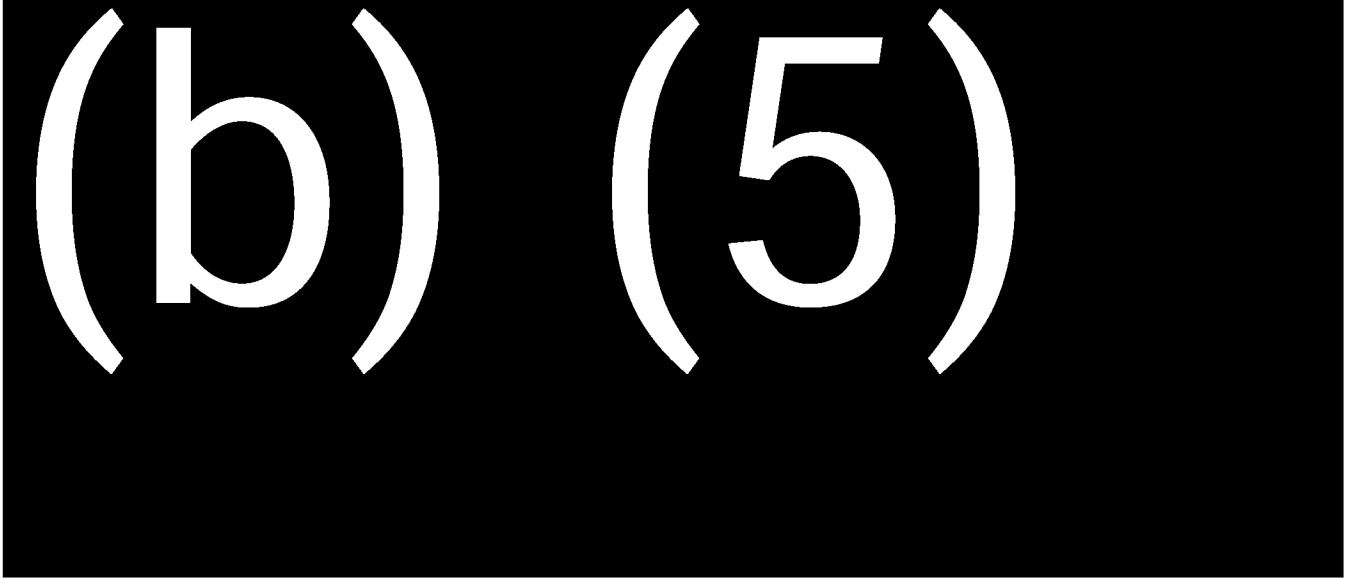
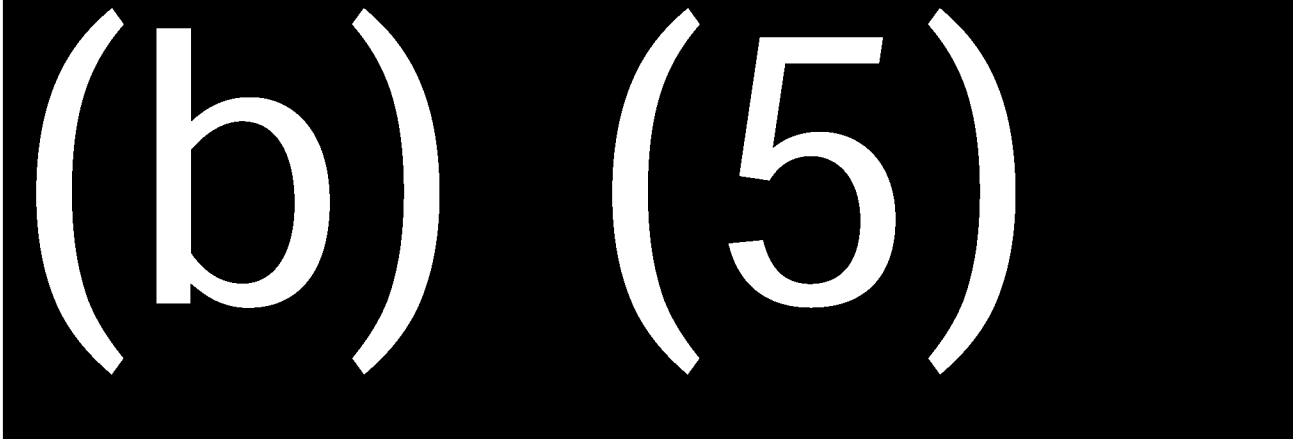


Figure 2: Estimated completion timeline for NPRA Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q



(b) (5)

(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2D data)				■	■	■						
Review technical data and interpret seismic data					■	■	■					
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment												
Prepare release document (fact sheet)												
Hold technical and editorial review												
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

(b) (5)

Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q

(b) (5)

Central North Slope

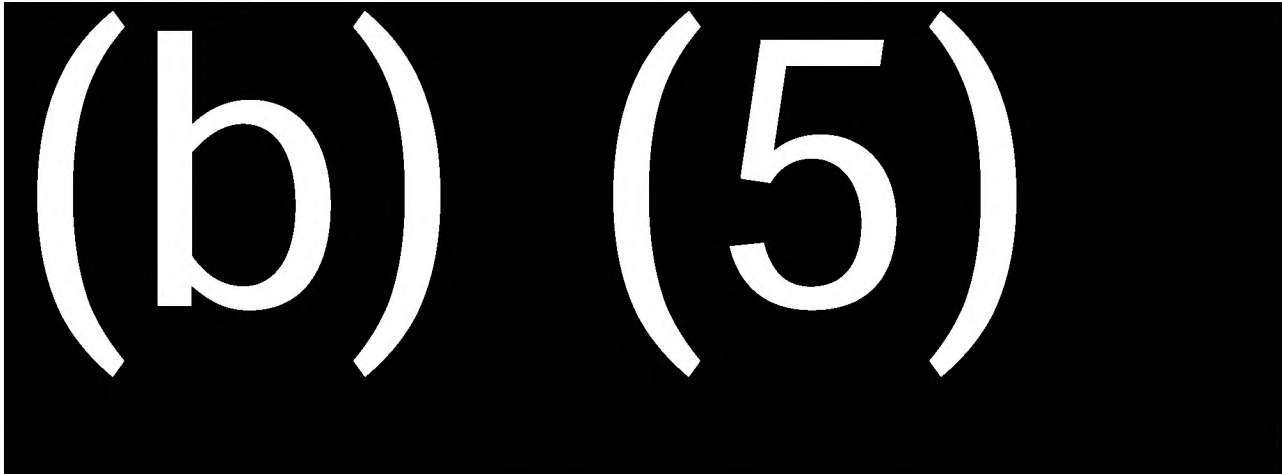
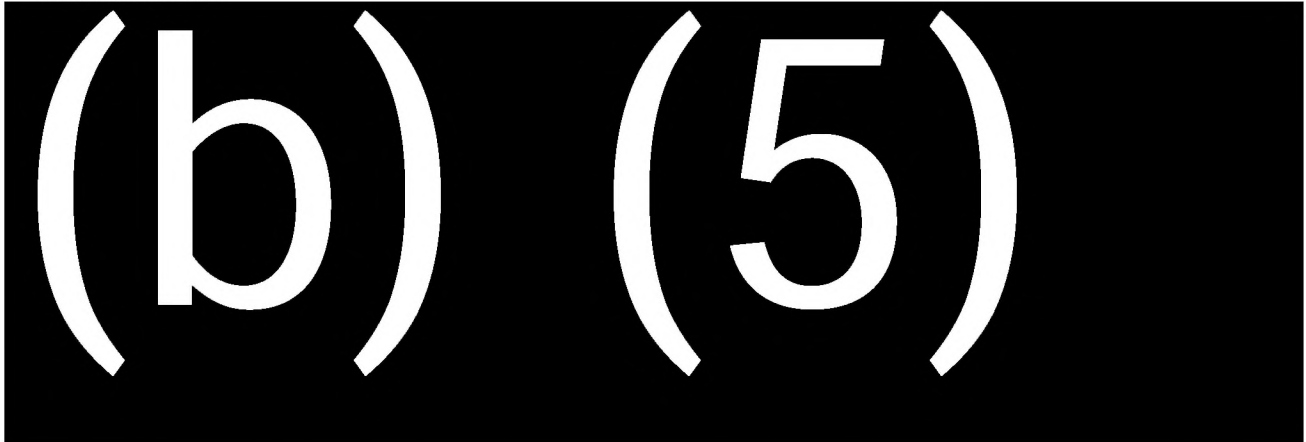


Figure 5: Estimated completion timeline for Central North Slope Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
A large black rectangular redaction box covering the entire body of the table. The text "(b) (5)" is written in large white font across the center of the redaction.												

West of NPRA



**Figure 6: Estimated completion timeline for West of NPRA Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2D/3D seismic data												
Review technical data and interpret seismic data												
Refine interpretations of seismic and well data												
Define AUs; prepare for public review & assessment												
Conduct public review meetings												
Conduct assessment												
Prepare release document (fact sheet)												
Hold technical and editorial review												
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

# Conversation Contents

## USGS Resource Assessment Proposal - Alaska North Slope V1

### Attachments:

/53. USGS Resource Assessment Proposal - Alaska North Slope V1/1.1 USGS Resource Assessment Proposal - Alaska North Slope V1.docx

### Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>

---

**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Mon Jun 12 2017 15:19:50 GMT-0600 (MDT)  
**To:** "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** USGS Resource Assessment Proposal - Alaska North Slope V1  
**Attachments:** USGS Resource Assessment Proposal - Alaska North Slope V1.docx

Please use this one

### "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>

---

**From:** "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Sent:** Mon Jun 12 2017 15:20:16 GMT-0600 (MDT)  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** Re: USGS Resource Assessment Proposal - Alaska North Slope V1

got it

On Mon, Jun 12, 2017 at 5:19 PM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

| Please use this one

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

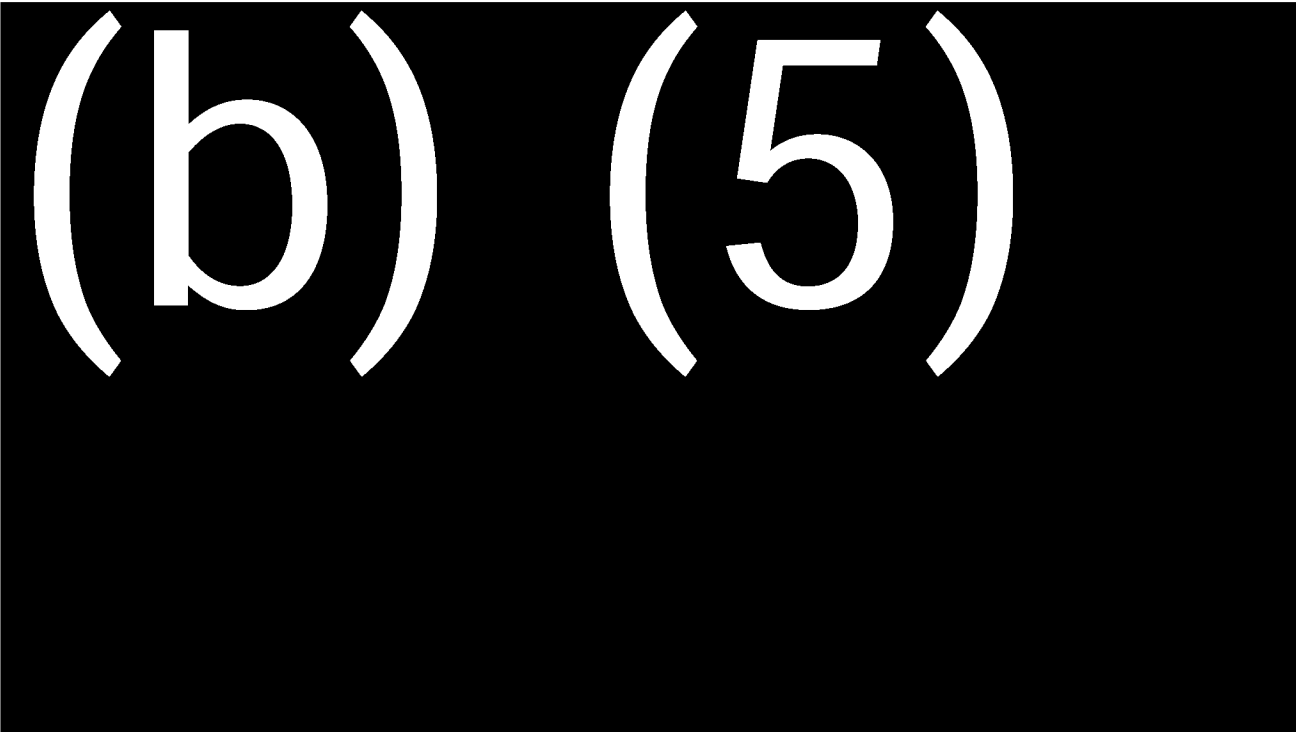
**USGS Resource Assessment Proposal  
Alaska North Slope  
June 12, 2017**

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**Current Alaska North Slope Assessments**



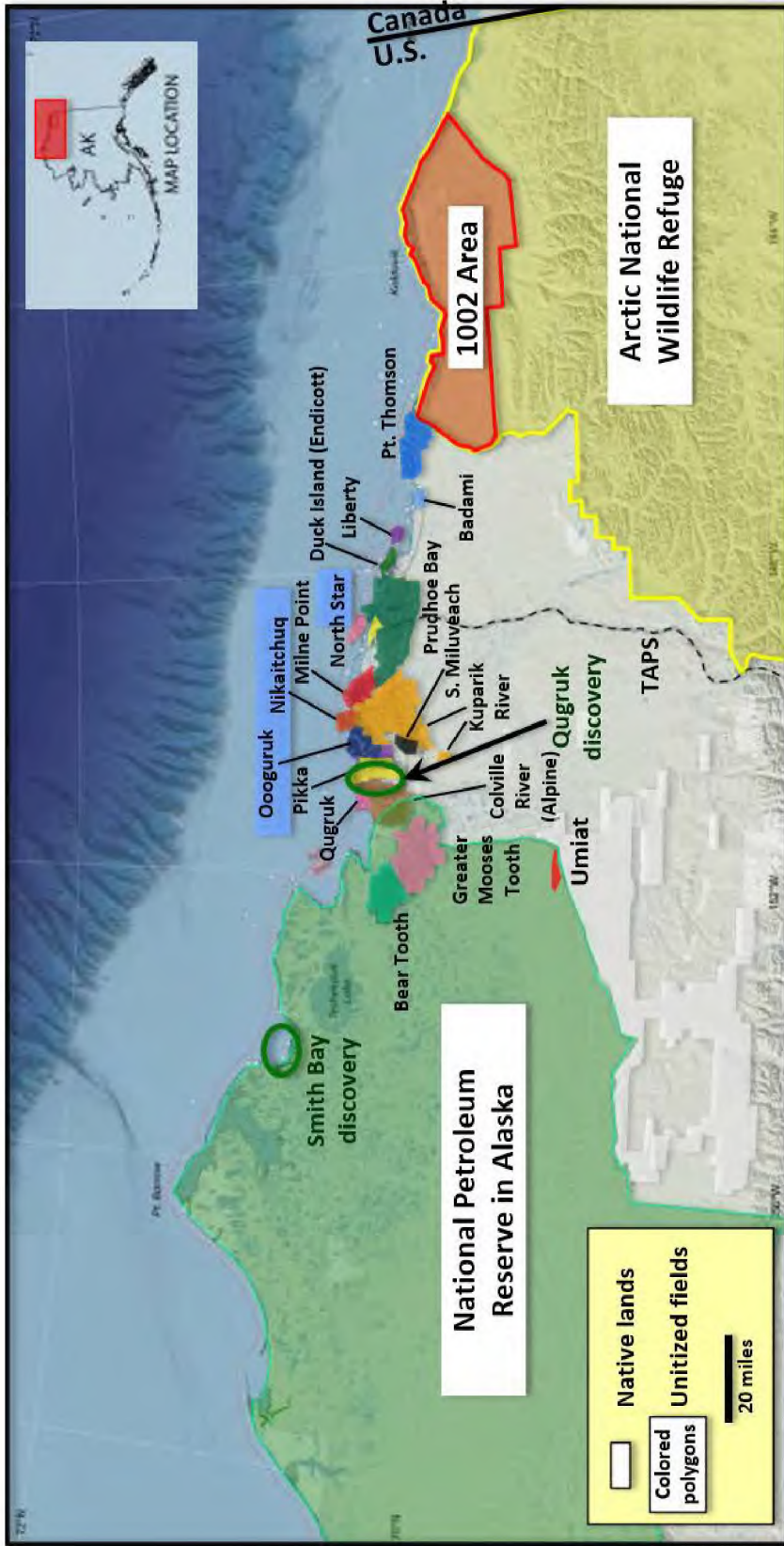


Figure 1: Base map of Alaska North Slope

(b) (5)

(b) (5)

**Table 1: Cost information, Alaska North Slope Assessment Options**

<b>Assessment</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
National Petroleum Reserve – Alaska	(b)	(5)					
Alaska National Wildlife Refuge							
ANWR – Option 1							
ANWR – Option 2							
ANWR – Option 3							
Central North Slope							
West of NPRA							

Note: Totals not provided due to range of assessment scenarios provided

National Petroleum Reserve – Alaska (NPRA)



Figure 2: Estimated completion timeline for NPRA Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■											
Refine interpretations of seismic and well data		■										
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment				■								
Prepare release document (fact sheet)				■								
Hold technical and editorial review				■								
Release assessment				■								
Hold briefings for Admin., Congress, State et al.				■								

(b) (5)

(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2D data)			■		■							
Review technical data and interpret seismic data				■								
Refine interpretations of seismic and well data						■						
Define AUs; prepare for public review & assessment							■					
Conduct public review meetings												
Conduct assessment												
Prepare release document (fact sheet)												
Hold technical and editorial review												
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

(b) (5)

**Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2D data)				█								
Review technical data and interpret seismic data						█						
Refine interpretations of seismic and well data									█			
Define AUs; prepare for public review & assessment										█		
Conduct public review meetings											█	
Conduct assessment												█
Prepare release document (fact sheet)												
Hold technical and editorial review												█
Release assessment												█
Hold briefings for Admin., Congress, State, et al.												█

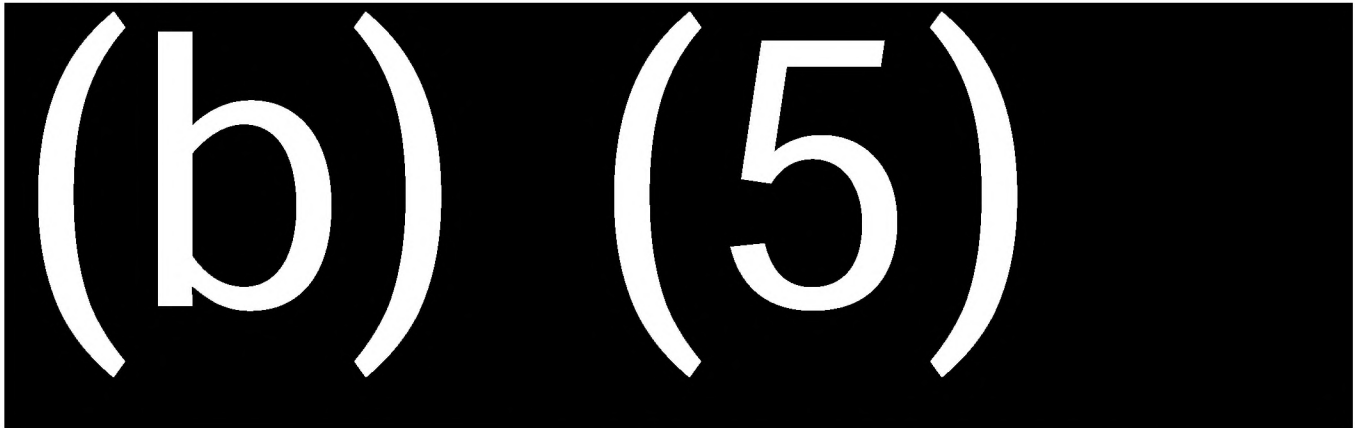
Central North Slope



**Figure 5: Estimated completion timeline for Central North Slope Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2D/3D seismic data			■	■								
Review technical data and interpret seismic data				■	■							
Refine interpretations of seismic and well data						■	■					
Define AUs; prepare for public review & assessment							■	■				
Conduct public review meetings								■				
Conduct assessment									■			
Prepare release document (fact sheet)												
Hold technical and editorial review											■	
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

West of NPRA



**Figure 6: Estimated completion timeline for West of NPRA Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2D/3D seismic data							■	■				
Review technical data and interpret seismic data								■	■			
Refine interpretations of seismic and well data									■	■		
Define AUs; prepare for public review & assessment										■		
Conduct public review meetings											■	
Conduct assessment												■
Prepare release document (fact sheet)												
Hold technical and editorial review												■
Release assessment												■
Hold briefings for Admin., Congress, State, et al.												

# Conversation Contents

## assessment timeline & budget

### Attachments:

/54. assessment timeline & budget/1.1 Assessment Timeline.xlsx  
/54. assessment timeline & budget/1.2 Assessment Budget.xlsx  
/54. assessment timeline & budget/7.1 USGS Resource Assessment Proposal - Alaska North Slope V1.docx

## "Houseknecht, David" <dhouse@usgs.gov>

---

**From:** "Houseknecht, David" <dhouse@usgs.gov>  
**Sent:** Mon Jun 12 2017 11:31:27 GMT-0600 (MDT)  
**To:** Walter Guidroz <wguidroz@usgs.gov>  
**Subject:** assessment timeline & budget  
**Attachments:** Assessment Timeline.xlsx Assessment Budget.xlsx

Here are (1) same timeline as before with fiscal years color coded and (2) my first cut at budget. Want to review this some more and talk to admin about a few things, so consider this draft.

--

Dave Houseknecht  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
MS 956  
Reston, VA 20192  
(703) 648-6466

## Walter Guidroz <wguidroz@usgs.gov>

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**From:** Walter Guidroz <wguidroz@usgs.gov>  
**Sent:** Mon Jun 12 2017 12:45:16 GMT-0600 (MDT)  
**To:** David Houseknecht <dhouse@usgs.gov>  
**Subject:** RE: assessment timeline & budget

Thanks!!

**From:** Houseknecht, David [mailto:[dhouse@usgs.gov](mailto:dhouse@usgs.gov)]  
**Sent:** Monday, June 12, 2017 1:31 PM  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** assessment timeline & budget

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MS 956  
Reston, VA 20192  
(703) 648-6466

---

**Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>**

---

**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Mon Jun 12 2017 12:51:38 GMT-0600 (MDT)  
**To:** David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: assessment timeline & budget

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**Sent:** Monday, June 12, 2017 2:45 PM  
**To:** David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: assessment timeline & budget

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**Sent:** Monday, June 12, 2017 1:31 PM  
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**"Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>**

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**From:** "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Sent:** Mon Jun 12 2017 13:32:11 GMT-0600 (MDT)  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** Re: assessment timeline & budget

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**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Mon Jun 12 2017 14:04:11 GMT-0600 (MDT)  
**To:** David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: assessment timeline & budget

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**From:** "Houseknecht, David" <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Sent:** Mon Jun 12 2017 14:45:09 GMT-0600 (MDT)  
**To:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Subject:** Re: assessment timeline & budget

There really is nothing else because the Alaska project only has two tasks - Arctic Alaska and Central/Southern Alaska. And, the problem with redirecting the latter is that much of Stanley's

OE goes towards his field collaboration with DNR.

On Mon, Jun 12, 2017 at 4:04 PM, Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)> wrote:

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## **Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>**

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**From:** Walter Guidroz <[wguidroz@usgs.gov](mailto:wguidroz@usgs.gov)>  
**Sent:** Mon Jun 12 2017 14:51:16 GMT-0600 (MDT)  
**To:** David Houseknecht <[dhouse@usgs.gov](mailto:dhouse@usgs.gov)>  
**Subject:** RE: assessment timeline & budget  
**Attachments:** USGS Resource Assessment Proposal - Alaska North Slope V1.docx

OK, understood. I've put together where I think we are (at least as of 4:50 PM today); can you please take a look at what's there and edit as appropriate? I tried to make it a little shorter and included timelines as well as a blurb about Alaska DNR (you'll notice that I put the same blurb in each scenario/assessment – that may or may not be appropriate so edit as necessary). Thanks!

Walter

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Assessment	Task	Calendar Year 2017				Calendar Year 2018				Calendar Year 2019			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
NPRA	A												
	B	XXXXXX	XXXXXXXXXX										
	C		XXXXX	XXXXX									
	D			XXXXXXXXXX									
	E			XX	XX								
	F				X								
	G				X								
	H				XX								
	I												X
	J												X

**ANWR 1** no updated assessment (no reprocessed seismic data and no new geological data sufficient to trigger assessment)

Assessment	Task	Calendar Year 2017				Calendar Year 2018				Calendar Year 2019			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
ANWR 2 Reprocess vintage 2-D seismic data	A			XXXX	XXXXXXXXXX	XXXXXXXXXX							
	B				XX	XXXXXXXXXX	XXXXX						
	C					XXXXXXXXXX	XX						
	D						XXXXXXXXXX	XX					
	E						XX	XX					
	F							X					
	G							X					
	H							XX					
	I								X				
	J								X				

Assessment	Task	Calendar Year 2017				Calendar Year 2018				Calendar Year 2019			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
ANWR 3 New 3-D seismic survey	A												
	B												
	C												
	D							XXXXX	XXXXXXXXXX	XXXXXXXXXX			
	E									XXXX	XXXXXXXXXX		
	F										XXXX	XXXX	
	G											XXXX	
	H												X
	I												X
	J												XX

- A Seismic data reprocessing or acquisition and processing of new 3-D data, including procurement
- B Review technical data and interpret seismic data
- C Refine interpretations of seismic and well data
- D Define assessment units and prepare for public review and assessment
- E Conduct public review meetings
- F Conduct assessment
- G Prepare release document (fact sheet)
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- I Release
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FY2017 FY2018 FY2019 FY2020

----- Task not performed by USGS

Assessment	Task	Calendar Year 2019				Calendar Year 2020				Calendar Year 2021			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Central North Slope (between NPRA and ANWR)	A		XXXXXX	XXXXXXXXXX	XXXXXXXXXX								
	B				XX	XXXXXXXXXX	XXXX						
	C						XXXXXX	XX					
	D							XXXXXXXXXX					
	E								XX	XX			
	F									X			
	G									X			
	H									XX			
	I										X		
	J										X		

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Assessment	Task	Calendar Year 2019				Calendar Year 2020				Calendar Year 2021			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
West of NPRA	A							XXXX	XXXXXXXXXX				
	B								XXX	XXXXXXXXXX			
	C									XXX	XXXXXXXXXX		
	D										XXXXXXXXXX		
	E										XXXX		
	F											X	
	G											X	
	H											XX	
	I												X
	J												X

Note change in Calendar Year compared to previous timelines

FY2019    FY2020    FY2021    FY2022

- A Acquisition of existing seismic data (3-D and 2-D), including procurement
- B Review technical data and interpret seismic data
- C Refine interpretations of seismic and well data
- D Define assessment units and prepare for public review and assessment
- E Conduct public review meetings
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Assessment Quarter	Task	Calendar Year 2017				Calendar Year 2018				Calendar Year 2019			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
NPRA	A												
	B	XXXXXX	XXXXXXXXXX										
	C		XXXX	XXXX									
	D			XXXXXXXXXX									
	E			XX	XX								
	F				X								
	G				X								
	H				XX								
	I												X
	J												

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Assessment Quarter	Task	Calendar Year 2017				Calendar Year 2018				Calendar Year 2019			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
ANWR 2 Reprocess vintage 2-D seismic data	A			XXXX	XXXXXXXXXX	XXXXXXXXXX							
	B				XX	XXXXXXXXXX	XXXX						
	C						XXXXXX	XX					
	D							XXXXXXXXXX					
	E							XX	XX				
	F								X				
	G								X				
	H									XX			
	I												X
	J												

Assessment Quarter	Task	Calendar Year 2017				Calendar Year 2018				Calendar Year 2019			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
ANWR 3 New 3-D seismic survey	A				XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXX				
	B							XXXX	XXXXXXXXXX	XXXXXXXXXX			
	C									XXXX	XXXXXXXXXX		
	D										XXXX	XXXX	
	E											XXXX	
	F												X
	G												X
	H												XX
	I												X
	J												X

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Assessment	Task	Calendar Year 2019				Calendar Year 2020				Calendar Year 2021			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Central North Slope (between NPRA and ANWR)	A			XXXXXXXXXX	XXXXXXXXXX								
	B				XX	XXXXXXXXXX	XXXX						
	C						XXXXXX	XX					
	D							XXXXXXXXXX					
	E								XX	XX			
	F									X			
	G									X			
	H										XX		
	I											X	
	J												X

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Assessment	Task	Calendar Year 2019				Calendar Year 2020				Calendar Year 2021			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
West of NPRA	A							XXXX	XXXXXXXXXX				
	B								XXX	XXXXXXXXXX			
	C									XXX	XXXXXXXXXX		
	D										XXXXXXXXXX		
	E										XXXXX		
	F											XXXX	
	G											X	
	H											X	
	I												XX
	J												X

Note change in Calendar Year compared to previous timelines

- A Acquisition of existing seismic data (3-D and 2-D), including procurement
- B Review technical data and interpret seismic data
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**USGS Resource Assessment Proposal  
Alaska North Slope  
June 12, 2017**

**Introduction**

Secretarial Order 3352 (Section 4b) directs the Assistant Secretary – Land and Minerals Management and the Assistant Secretary – Water and Science to submit to the Counselor to the Secretary for Energy Policy a joint plan for updating current assessments of undiscovered, technically recoverable oil and natural gas resources of the Alaska North Slope (Figure 1), focusing on Federal lands including the National Petroleum Reserve in Alaska (NPR) and the Section 1002 Area of the Arctic National Wildlife Refuge (ANWR).

(b) (5)

(b) (5)

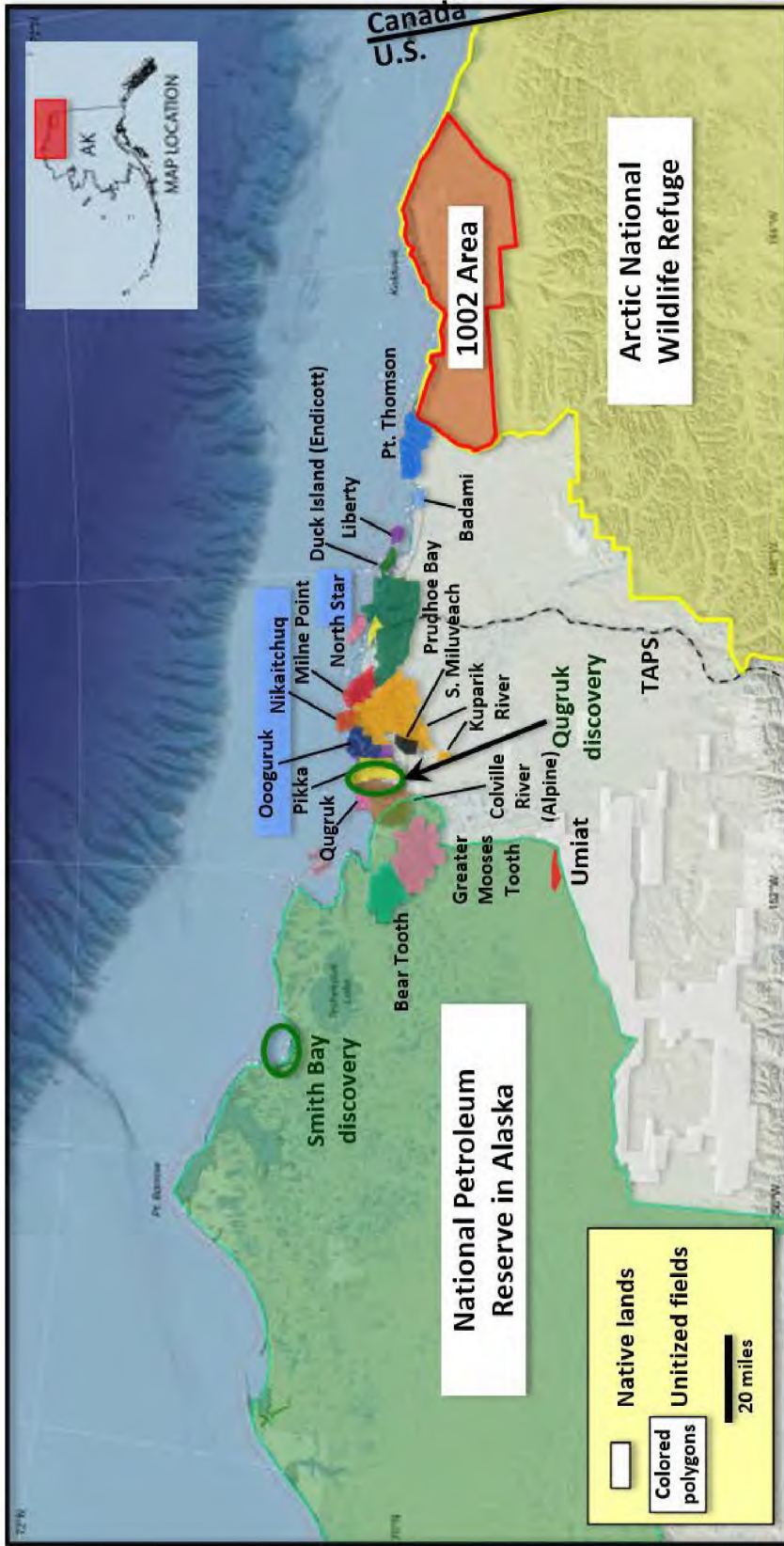


Figure 1: Base map of Alaska North Slope

(b) (5)

(b) (5)

**Table 1: Cost information, Alaska North Slope Assessment Options**

<b>Assessment</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
National Petroleum Reserve – Alaska	(b)	(5)					
Alaska National Wildlife Refuge							
ANWR – Option 1							
ANWR – Option 2							
ANWR – Option 3							
Central North Slope							
West of NPRA							

Note: Totals not provided due to range of assessment scenarios provided

National Petroleum Reserve – Alaska (NPRA)



Figure 2: Estimated completion timeline for NPRA Resource Assessment

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Review technical data and interpret seismic data	■											
Refine interpretations of seismic and well data		■										
Define AUs; prepare for public review & assessment			■									
Conduct public review meetings				■								
Conduct assessment				■								
Prepare release document (fact sheet)				■								
Hold technical and editorial review				■								
Release assessment				■								
Hold briefings for Admin., Congress, State et al.				■								

(b) (5)

(b) (5)

Figure 3: Estimated completion timeline for ANWR Resource Assessment (Scenario 2)

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2D data)			■		■							
Review technical data and interpret seismic data				■								
Refine interpretations of seismic and well data						■						
Define AUs; prepare for public review & assessment							■					
Conduct public review meetings												
Conduct assessment												
Prepare release document (fact sheet)												
Hold technical and editorial review												
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

(b) (5)

**Figure 4: Estimated completion timeline for ANWR Resource Assessment (Scenario 3)**

Task	CY 2017				CY 2018				CY 2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Seismic data reprocessing (existing 2D data)				█								
Review technical data and interpret seismic data						█						
Refine interpretations of seismic and well data									█			
Define AUs; prepare for public review & assessment										█		
Conduct public review meetings											█	
Conduct assessment												█
Prepare release document (fact sheet)												
Hold technical and editorial review												█
Release assessment												█
Hold briefings for Admin., Congress, State, et al.												█

Central North Slope

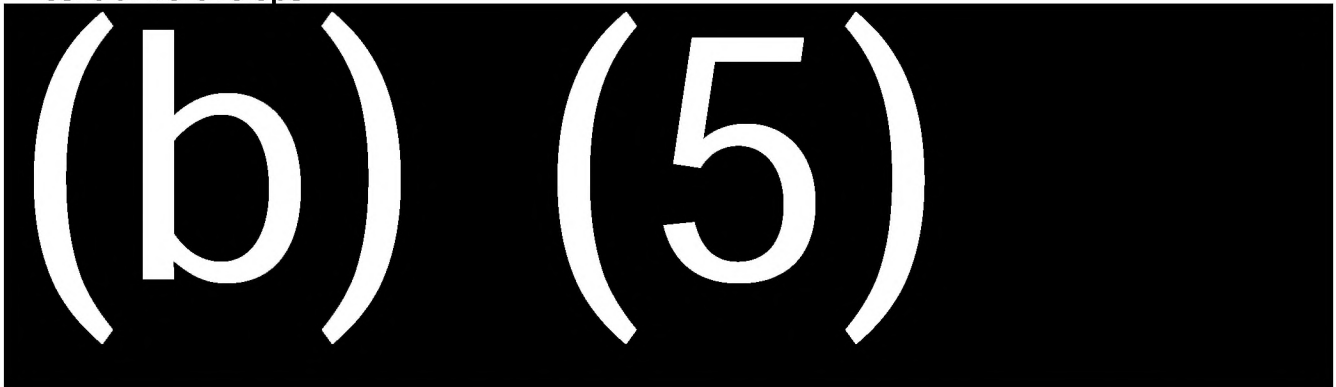


Figure 5: Estimated completion timeline for Central North Slope Resource Assessment

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2D/3D seismic data			█	█								
Review technical data and interpret seismic data				█	█							
Refine interpretations of seismic and well data						█						
Define AUs; prepare for public review & assessment							█					
Conduct public review meetings								█				
Conduct assessment									█			
Prepare release document (fact sheet)												
Hold technical and editorial review												
Release assessment												
Hold briefings for Admin., Congress, State, et al.												

West of NPRA



**Figure 6: Estimated completion timeline for West of NPRA Resource Assessment**

Task	CY 2019				CY 2020				CY 2021			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquire existing 2D/3D seismic data							■	■				
Review technical data and interpret seismic data								■	■			
Refine interpretations of seismic and well data									■	■		
Define AUs; prepare for public review & assessment										■		
Conduct public review meetings											■	
Conduct assessment												■
Prepare release document (fact sheet)												
Hold technical and editorial review												■
Release assessment												■
Hold briefings for Admin., Congress, State, et al.												