U.S. Department of the Interior
Bureau of Land Management

National Petroleum Reserve in Alaska: Legacy Wells Strategic Plan FY25

Mission Statement

The Bureau of Land Management sustains the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations.

Cover Photo

Kaolak Test Well #1

For more Information

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I. INTRODUCTION

Between 1944 and 1982, the U.S. Navy and the U.S. Geological Survey (USGS) conducted exploratory and scientific drilling programs on Alaska's North Slope in the Naval Petroleum Reserve No. 4 – now called the National Petroleum Reserve in Alaska (NPR-A). In 1976, the Department of the Interior was given responsibility for managing the NPR-A, and in 1982 the Bureau of Land Management inherited the responsibility to assess, plug, and clean up the 136 wells that the U.S. Navy and USGS left behind (see Appendix 2 for a detailed timeline).

The BLM has spent nearly $235 million cataloging and remediating priority "legacy wells." Some of the remaining wells continue to be used for scientific research by USGS. Since the 2020 Strategic Plan was released, BLM plugged 14 wells at a cost of $89 million. The projects included the technically difficult Iko Bay 1 gas well, the Tulageak 1 well plugging and reserve pit remediation, and plugging the Oumalik four-well cluster that included an unforeseen PCB cleanup.

This plan lays out a dynamic and flexible near-term strategy for addressing the remaining priority wells, while re-emphasizing BLM's commitment to achieving full remediation of all the inherited wells. For the purposes of this document, remediation is defined as plugging the well bore to federal regulatory standards and conducting surface cleanup activities at a legacy well site. In FY25, the BLM plugged the Fish Creek 1 and Cape Halkett 1 wells using appropriated funds and completed the plugging of the three Knifeblade wells using BIL funds.

Stakeholder cooperation has been instrumental in advancing work on legacy wells. Key partners in this effort include the Alaska Oil and Gas Conservation Commission (AOGCC), Alaska Department of Environmental Conservation (ADEC), Arctic Slope Regional Corporation (ASRC), and North Slope Borough (NSB).

Current information and conditions from the 2013 Legacy Well Summary Report and its citations were examined along with reconstructed wellbore diagrams to determine plugging solutions that satisfy both Federal and State regulations. The BLM is working with the AOGCC on seasonal well plugging projects, covering all aspects such as plugging design, procedures, downhole site condition changes and contingencies.

For each legacy well, surface sampling plans and lab results are submitted to ADEC, which conducts a high-level review and provides final approval confirming that no harmful materials remain at those locations.

Several legacy wells have been conveyed out of federal ownership. The BLM plugged and remediated the reserve pit at Atigaru in 2009. The BLM plugged three government drilled Legacy wells in 2019 on behalf of ARSC and has continued their commitment to plug wells specifically designated within the provisions of conveyance. Similarly, the BLM has plugged six wells on NSB lands within the vicinity of Utqiaġvik. This was completed over two seasons with constant coordination and final approval by the NSB.

II. STATUS OF LEGACY WELLS

This strategic plan examines the remaining Legacy Wells that were drilled under the direction of the U.S. Navy or the USGS. Twenty-two wells remain unplugged and break down into two categories; Wells requiring Action and Temperature Monitoring Wells (Table 1).

Table 1: Legacy Well Summary Status

Category	# Wells
Wells Requiring Action	6
Temperature Monitoring Wells (USGS) - Watching	16

The remaining six wells requiring action (specifically plugging and abandonment) are discussed in Section Four ("Remaining Wells") and listed in Appendix 1. Two additional wells, Minga Velocity Test 1 and Sentinel Hill Core Test 1, could not be located and are therefore not included in this report. These wells were previously addressed in the 2020 Strategic Plan. Minga Velocity Test 1 was a shallow hole drilled in Lake Sinclair to test seismic wave velocity through permafrost. It encountered no oil or gas shows, and only the first 27 feet is cased. Sentinel Hill Core Test 1 was drilled along the Colville River in 1947 and was buried in a landslide shortly after completion. There has been no sign of surface or subsurface risk in the estimated location of these wells. Upon location, BLM will re-evaluate their status.

The USGS is currently using 16 wells for permafrost studies. Wells located near the coastline or adjacent to freshwater lakes will continue to be monitored to detect any changes that could affect the stability of well pads, well bores, or reserve pits. Due to significant coastal erosion, the East Simpson 1 well has been reclassified from a Temperature Monitoring Well to a Well Requiring BLM Action. The West Dease 1 well has been added to the watch list due to increased coastal erosion activity. BLM will continue to work with the USGS to establish a plan for the eventual disposition and remediation of the Temperature Monitoring Wells when they are no longer necessary for research, or as coastal erosion dictates the need for plugging and remediation.

III. STRATEGY

The remaining wells are ranked based on priority using the risk assessment methodology found in Appendix 2. The BLM grouped wells that may be in close proximity for economies of scale. This approach reduces the overall cost per well by maximizing the efficiency of mobilization and de-mobilization efforts, which are typically the most significant expenses associated with this work.

With this strategy and adequate continuation of funding, the six wells requiring BLM action can be plugged and remediated within five years. This timeframe would be subject to unforeseen circumstances that affected a current project or changing conditions such as coastal erosion that would require action on an unexpected temperature monitoring well. The estimated cost for plugging and remediating the six remaining wells is approximately $60-100 million. This range takes into account inflation, the possibility of opportunistic cost savings or unforeseen expenditures due to an unknown condition.

The ability to enter into partnerships may also influence the priority and pace of legacy well work. Partnerships can help the BLM leverage resources with other federal agencies or non-federal entities that are conducting work near legacy well sites where additional action is necessary. These opportunities to share costs ultimately can benefit both parties.

Although not a factor in this strategic plan's priorities and actions, exploration and development of Federal oil and gas lease tracts in the coming years may also help to facilitate legacy well plugging and site clean-up. Section 349 of the Energy Policy Act of 2005 allows the BLM to offset costs for remediation on lands subject to a new or current lease with royalty relief. The BLM works closely with industry to identify these opportunities as part of their exploration or development programs. To date, there has not been interest in participation of this provision.

The BLM does not plan to plug any temperature monitoring wells currently in use by USGS unless they are threatened by coastal erosion. For example, West Dease 1 is being watched for potential changes to site conditions from coastal erosion but is not considered to be threatened unless noticeable changes in the coastline occur. The BLM will continue to monitor coastal erosion at all locations.

IV. REMAINING WELLS

1. EAST SIMPSON 1

EAST SIMPSON 1

Subsurface: The well has low subsurface risk because there are plugs present isolating potentially productive zones. The well is currently in use by USGS for temperature monitoring. Diesel fuel is present from the top plug to near surface which allows the monitoring to occur through the non-corrosive, non-freezing medium.

Surface: The surface ranking for this well is high because the threat of coastal erosion is significant. The reserve pit is approximately 800 feet from the advancing shoreline. Approximately 25-50 feet is being eroded per year, but it is also possible to lose between 50-100 feet of coastline with single, severe storm events. The reserve pit was characterized in the winter of 2023 to determine the extent of contaminants requiring removal.

2. TOPAGORUK WELLS (2)

TOPAGORUK 1

Subsurface: The subsurface ranking for this well is moderate because there are no plugs isolating the formations where hydrocarbon shows were encountered. Drilling encountered very poor oil and gas shows, indicating a lack of visible sign of petroleum resources. One plug was set but was placed below the documented shows. The well is cased and open hole.

Surface: The surface risk rating is high because of the extensive surface debris present including battery cores, extensive refrigerant piping and drilling muds. The surface is scheduled for characterization for early winter 2025.

EAST TOPAGORUK 1

Subsurface: The subsurface risk rating is low because the formation where hydrocarbon shows were seen have been isolated. No oil or gas was recovered during multiple production tests and one plug was set. The well is cased and open hole.

Surface: The surface ranking is low because only minor solid wastes are present.

3. SKULL CLIFF

SKULL CLIFF CORE TEST 1

Subsurface: The subsurface risk is moderate. This shallow well has no oil or gas shows and no cement plugs. Its moderate ranking is due to 54 feet of diesel (about 16 barrels) in the wellbore, added to prevent freezing and facilitate downhole temperature measurements. The well is cased to 30 feet and open hole.

Surface: Skull Cliff lies within a popular corridor connecting Barrow and Wainwright. Solid waste cleanup occurred in the summer of 2025. Additional surface sampling will occur during the plugging effort.

4. KAOLAK

KAOLAK 1

Subsurface: The subsurface ranking for the well is moderate because there are currently no plugs isolating the potential hydrocarbon zones. The well is cased and open hole.

Surface: The surface ranking is moderate because of the extensive solid waste impacts visual resources and may pose a travel risk to local residents. There is an agreement with Alaska State Historic Preservation Office that an archeological assessment will be done before any cleanup or remediation activities will occur.

5. MEADE

MEADE 1

Subsurface: The subsurface priority is low because the productive gas zone has been isolated with cement plugs. The well is cased and open hole.

Surface: The surface risk is considered moderate because there is potential of diesel fuel leaking within the surrounding soils due to a refrigeration system buried under the tundra.

V. CONCLUSION

The BLM will procure services to remediate the remaining wells based on funding availability.

The BLM will continue to regularly inspect these wells for the following parameters to determine if any conditions have changed that would require re-prioritization: rate of coastal erosion for those sites within 1,000 feet of the coastline along the Beaufort Sea; erosional stability of the well site; the integrity (corrosion or failure) of any wellhead protection devices; visible petroleum contamination related to solid waste or wellhead leaks; other well integrity issues; and changes in land use patterns or proximity to travel corridors or population centers.

VI. BIBLIOGRAPHY

Brumbaugh, Rob and Stacie MacIntosh. May 2013. National Petroleum Reserve in Alaska: 2013 Legacy Wells Summary Report. Bureau of Land Management Open File Report 127. BLM/AK/ST-13/005+2360+932. 648 p.

Brumbaugh, Rob and Stan Porhola. Alaska Legacy Wells Summary Report: National Petroleum Reserve-Alaska. Bureau of Land Management Open File Report. BLM/AK/ST-05/004+2360+941. Anchorage AK. 2004. 71 p.

U.S. Bureau of Land Management, U.S. Geological Survey. Environmental Status of 28 Oil and Gas Exploration Areas of Operation in the National Petroleum Reserve-Alaska. Bureau of Land Management Publication, Anchorage, AK. 1992. 99 p.

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APPENDICES

APPENDIX 1: LEGACY WELLS DISPOSITION SUMMARY

(Numbers in Parentheses Indicate Number of Wells)

Wells Requiring No Additional BLM Action (97)

Well Category	Well Names
Transferred to NSB under the Barrow Gas Field Transfer Act (19)	South Barrow 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20; Walakpa 1, 2
Transferred under the 1981 Cape Halkett Exchange (1)	W.T. Foran 1 – Plugged by Chevron after drilling Livehorse 1 in 1982. The privately drilled Livehorse well reused the same reserve pit as WT Foran.
Plugged: no subsurface risk, no surface risks (57)	Arcon Barrow Core Test 1, Atigaru Point 1, Avak 1, Barrow Big Rig Test 1, Barrow Core Rig Test 2, Cape Halkett 1, Drew Point 1, East Oumalik 1, East Teshekpuk 1, Fish Creek 1, Gubik Test 1, Gubik Test 2, Grandstand 1, Iko Bay 1, Inigok 1, JW Dalton 1, Knifeblade 1, 2, 2A; North Simpson 1, Oumalik 1, Oumalik Core Tests 2, 11, 12; Simpson 1, Simpson Core Tests 13, 14, 14A, 15, 26, 27, 28, 29, 30, 30A, 31; South Barrow 1, 2, 3; South Simpson 1, Square Lake 1, Titaluk 1, Tulageak 1, Umiat 1, 2, 3, 4, 5, 6, 7, 8, 9 10, 11; Wolf Creek 1, 2, 3
Shallow, uncased wellbore: no subsurface risk, no surface risks (35)	Barrow Core Rig Test 1, Ikpikpuk Core Test 1, Oumalik Core Test 1, Oumalik Foundation Tests 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; Simpson Core Tests 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12; Simpson Core Tests 16, 17, 18, 19, 20, 21, 22, 23, 24, 25
Wells with unknown locations, no apparent risk at this time (2)	Minga Velocity Test 1, Sentinel Hill Core Test 1

USGS Temperature Monitoring Wells (16)

Well Category	Well Name
Wells being used by USGS for temperature monitoring; future plugging and surface clean-up will be necessary when no longer in use. (16)	Awuna 1, East Simpson 2, Ikpikpuk 1, Koluktak 1, Kugrua 1, Kuyanak 1, Lisburne 1, North Inigok 1, North Kalikpik 1, Peard 1, Seabee 1, South Harrison Bay 1, South Meade 1, Tunalik 1, West Dease 1, West Fish Creek 1

Wells Requiring BLM Action (6)

Well Category	Well Name
Require plugging and surface clean-up (6)	East Simpson 1, East Topagoruk 1, Kaolak 1, Meade 1, Skull Cliff Core 1, Topagoruk 1

APPENDIX 2: RISK ASSESSMENT METHODOLOGY

The priorities outlined in this plan are based on the subsurface and surface risk assessments included in the *2013 Legacy Wells Summary Report*.

The sites were assigned surface and subsurface risk rankings of None, Low, Moderate or High, before being additionally assessed against more general risk evaluation criteria (see Section C below). Generally, sites with higher risk ratings were considered for more immediate actions, and these risk assessments were used to prioritize the actions outlined in this strategic plan. However, sites with lower risk ratings may be completed ahead of higher priority wells if they are in close proximity to locations where work is being completed. Note that the existence of a single factor within any of the surface or subsurface categories (none, low, moderate, or high) translates directly into an assignment of at least that risk category. In other words, it is not necessary for all factors to exist for a given risk category to be assigned.

The BLM regularly inspects legacy well sites to assess changing conditions, which may result in different ranking if a change has occurred.

A. SURFACE RISKS

The surface risk assessment is based on the potential of the well or core test site to pose a risk or negative impact to surface resources and activities, including air, water, vegetation, or wildlife resources, as well as travel and visual resources. To assess surface risk, the BLM evaluated site conditions surrounding the well or core test.

The BLM assessed and rated the surface risk conditions at each site when it has any of the following:

HIGH SURFACE RISK:

- A well may be adversely affected by coastal erosion within 5 years
- Significant solid waste present that affects visual resources or public safety
- Potential to affect air or water quality because of the discharge of hydrocarbons under pressure

MODERATE SURFACE RISK:

- A travel or transportation risk to local residents due to surface debris
- Debris that impacts visual resources
- Evidence of buried waste on site

LOW SURFACE RISK:

- Minor solid waste present with minimal impact to visual resources or transportation
- No known contaminants are documented in historic literature, but not verified

NONE (NO SURFACE RISK):

- No known contaminants present
- Fully remediated with minor surface disturbance
- Minimal impact to visual resources.

B. SUBSURFACE RISKS

To determine a well or core test's subsurface risk, the BLM evaluated historical documents, such as drill logs and geologic reports, and conducted site assessments. The BLM also considered data on well plugging, including casing and cementing depth and materials, and the composition of materials believed to be left in the well.

HIGH SUBSURFACE RISK:

- A well or core test at the site penetrated oil or gas stratigraphy or water resources and is leaking hydrocarbons or has a history of leaking hydrocarbons.

MODERATE SUBSURFACE RISK:

- A cement plug is present below the perforations of the producing interval, but some surface controls are in place. Surface controls include a wellhead and/or a column of frozen drill mud that currently isolates the formation. There must be no indication of migration of fluid to surface.
- There are no cement plugs in the well with hydrocarbon shows, but some surface controls are in place, such as a wellhead or column of frozen drilling mud that currently isolates the formation, and there is no indication of migration of fluid to the surface.

LOW SUBSURFACE RISK:

- Penetrates oil or gas stratigraphy or water resources, but the producible oil and gas formations or water resources are isolated with adequate cement plugs; or
- The well has been historically plugged to surface, but the wellhead has not yet been removed.

NONE (NO SUBSURFACE RISK):

- Did not penetrate oil or gas stratigraphy or water resources; or
- Has been adequately plugged.

C. ADDITIONAL RISK EVALUATION CRITERIA

In addition to the surface and subsurface risk ratings, the BLM also evaluates risk by considering several different factors for each site, such as the specific impacts on public health and safety, how the site conditions may affect natural resources or future energy development, the type and condition of solid waste present, and the manner in which wells were plugged. For each factor, BLM evaluates the answers to several specific questions.

Protection of Public Health and Safety

1. Is the well near human activity? If so, are there conditions present that pose a risk to people?
2. Does the well have oil or gas shows? If so, is the well capable of flowing?
3. Is there a wellhead? What is the condition of the wellhead? Have there been any previous problems or repair work?
4. What is the condition of the existing pad and pits, and is there any indication of contamination? If so, what is the type, nature and extent of contamination?

Impact on Resources and Future Energy Development

1. Does the well site in its current condition (such as oil and gas resource penetrated, but not currently isolated with plugs) impact future energy leasing?
2. Does the well site in its current condition pose an unacceptable risk to wildlife, subsistence, and other natural resource uses?
3. Are there open wellbores and cellars in which small animals may become trapped?
4. Is the wellsite threatened by the environment through natural progressions? (coastal erosion, fluvial processes, landslides, etc.)

Solid Waste Characterization

1. Is there a reserve pit associated with the site? All reserve pits present have received regulatory closure from the Alaska Department of Environmental Conservation. Is there a new concern or information that warrants a new evaluation of these sites? What is the character (volume and chemical nature) of waste associated with a reserve pit? Are there any water quality issues present within the reserve pit?
2. What is the surface condition of the existing pad and pits? Is contamination a possibility?
3. What is the inventory of other solid waste (old equipment, piping, barrels, etc.) and are there any associated current conditions that pose a potential hazardous material release?

Plugging

1. Are there any new risks that were not addressed during the original plugging operation that may need to be mitigated?
2. Is there anything associated with the well that may make plugging the well technically challenging?

APPENDIX 3: TIMELINE - LEGACY WELLS

1944 - 1952: The U.S. Navy drills 91 wells in the Naval Petroleum Reserve No. 4 (PET-4), including 59 cased exploratory wells and 32 uncased core tests.

1953 - 1975: The Navy drills 17 additional wells near Barrow in support of the Barrow Gas Field development.

1976: The Naval Petroleum Reserves Production Act of 1976 (NPRPA; Public Law 94-258) renames the PET-4 as the National Petroleum Reserve in Alaska (NPR-A) and orders the transfer of jurisdiction over the reserve from the Secretary of the Navy to the Secretary of the Interior, effective June 1, 1977.

The law directed the Department of the Interior to protect the surface and explore for oil and gas. At the time the law was enacted, the U.S. Geological Survey (USGS) supervised exploration and development for leases on Federal, Indian and certain Naval petroleum reserve land (to include NPR-A after the transfer).

1977: The BLM and USGS enter into a Memorandum of Understanding (42 FR 4542) giving USGS exclusive jurisdiction over the South Barrow Gas Field and specifying that the BLM and USGS share management of the surface areas of operations. The MOU designated the USGS as manager of the continuing exploration program during the interim period between the transfer of jurisdiction from the Navy to Interior.

1975 - 1982: The Navy and USGS drill 28 wells through a contract with Husky Oil Company.

1980: The NPRPA is amended to direct an expedited program of leasing.

1981: The BLM conveys the W.T. Foran well to the Arctic Slope Regional Corporation (ASRC).

1982: In January, the Minerals Management Service (MMS) takes over the functions of oil and gas exploration and development from the USGS Conservation Division. In December, onshore minerals management functions are transferred to the BLM via Secretarial Order 3087.

1982: The first competitive oil and gas lease sale is held for the NPR-A.

1984: The Barrow Gas Transfer Act transfers ownership responsibility of 19 Legacy Wells to ASRC.

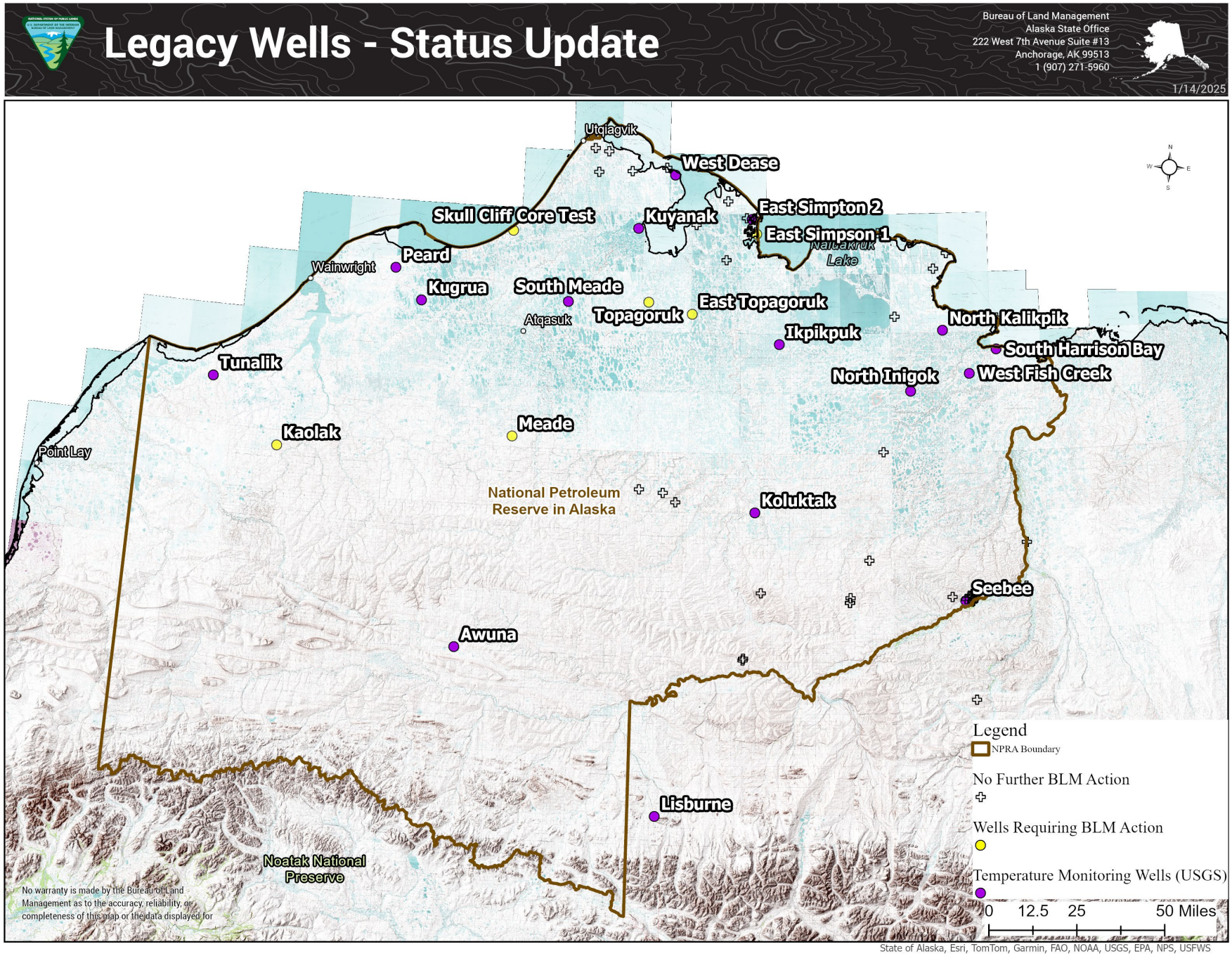
1986: The BLM conveys Grandstand 1 well to ASRC.

1995: The Alaska State Dept. of Environmental Conservation issues final closure for 27 of the USGS reserve pits. ADEC issues one reserve pit (East Teshekpuk) conditional closure. BLM conveys Gubik 1 and Gubik 2 wells to ASRC.

2002: Umiat 2 and Umiat 5 wells plugged by the U.S. Army Corps of Engineers, under the oversight of the BLM at a cost of $25 million.

2003 - 2005: The BLM inspects and evaluates all 136 wells and uncased core test sites to determine the threat posed to human health, safety and the environment. The 2004 Legacy Wells Summary Report prioritized those sites with the most immediate need of corrective action.

2005 - Present: Strategic plans were first developed in 2006, prioritizing well sites affected by coastal erosion and identifying clusters of wells near population centers as the priority. A revised plan followed in 2009 to document progress and further prioritize sites that posed significant risks. Updates to the Strategic Plan and Summary Report continued in 2013, followed by the release of a new Strategic Plan in 2020.


Legacy Wells - Status Update
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1/14/2025
Utqiagvik
West Dease
Skull Cliff Core Test
Kuyanak
East Simpton 2
East Simpson 1
Peard
Wainwright
Kugrua
South Meade
Topagoruk
East Topagoruk
Atqasuk
North Kalikpik
Ikpikpuk
South Harrison Bay
Tunalik
North Inigok
West Fish Creek
Kaolak
Meade
Point Lay
National Petroleum Reserve in Alaska
Koluktak
Seebee
Awuna
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Noatak National Preserve
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NPRA Boundary
No Further BLM Action
Wells Requiring BLM Action
Temperature Monitoring Wells (USGS)
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State of Alaska, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, NPS, USFWS