STATE OF ALASKA
ALASKA OIL AND GAS CONSERVATION COMMISSION
333 West 7th Avenue, Suite 100
Anchorage Alaska 99501

Re: THE APPLICATION OF BP Exploration (Alaska), Inc. to modify Area Injection Order 4E to accommodate expansion of the affected area.	)	Docket Number: AIO-12-019
	)	Area Injection Order 4F corrected
	)	
	)	Prudhoe Bay Field
	)	Prudhoe Bay Unit
	)	Eastern Operating Area
	)	Prudhoe Oil Pool
	)	Put River Oil Pool
	)	Lisburne Oil Pool
	)	Pt. McIntyre Oil Pool
	)	West Beach Oil Pool
	)	Stump Island Oil Pool
	)	North Slope Borough, Alaska
	)	
	)	July 18, 2014

IT APPEARING THAT:

1. By letter received September 25, 2012, BP Exploration (Alaska), Inc. (BPXA), requests the Alaska Oil and Gas Conservation Commission (AOGCC) issue an order expanding the affected area for the Prudhoe Bay Unit (PBU) Eastern Operating Area (EOA).

2. Pursuant to 20 AAC 25.540, the AOGCC tentatively scheduled a public hearing for November 13, 2012. On September 28, 2012, the AOGCC mailed printed copies of the notice of the opportunity for public hearing to all persons on the AOGCC's mailing distribution list, published notice of the opportunity for that hearing on the State of Alaska's Online Public Notice website and on the AOGCC's website, and electronically transmitted the notice to all persons on the AOGCC's email distribution list. On October 7, 2012, the notice was published in the ALASKA JOURNAL OF COMMERCE.

3. No protest to the application or request for hearing was received.

4. The AOGCC vacated the tentatively scheduled public hearing on October 30, 2012.

5. Because BPXA provided sufficient information upon which to make an informed decision, the request can be resolved without a hearing.

FINDINGS:

1. The AOGCC has issued numerous Area Injection Orders (AIO) and amendments to those orders to govern enhanced oil recovery injection operations in the PBU EOA. AIO 4 was issued on July 11, 1986, and amended once. AIO 4A was issued August 12, 1983, and revised once. AIO 4B was issued April 13, 1998. AIO 4C was issued March 23, 2000, corrected April 19, 2000 and amended 15 times. AIO 4D was issued December 2, 2005. AIO 4E was issued March 30, 2006, and it has been amended 42 times.

2. BPXA is the operator of the Prudhoe Bay Field and PBU, which are located in the North Slope Borough, Alaska.

3. BPXA's proposed expansion of the affected area of AIO 4E is based on new well information and a new structural interpretation from seismic data that expands the limits of the area capable of contributing to production.

4. Regulation 20 AAC 25.460 allows the AOGCC to prescribe rules permitting the underground injection of fluids on an area basis.

CONCLUSIONS:

1. BPXA's proposed expansion of the affected area of AIO 4E is warranted based on the revised structural interpretation.

2. The findings, conclusions, and administrative records for the AIOs and their amendments listed in Finding 1, above, should be combined within a single AIO to facilitate more effective administration of the PBU EOA enhanced recovery project.

3. Changes in enhanced oil recovery practices warrant periodic review and, if needed, revision of governing orders.

NOW THEREFORE IT IS ORDERED:

In addition to statewide requirements under 20 AAC 25 (to the extent not superseded by these rules), the following rules govern Class II injection operations in the affected area described below and supersede and replace the rules adopted in AIO 4E. To the extent not already incorporated into, or superseded by, these rules the administrative approvals issued under AIOs 4C and 4E remain in effect:

AFFECTED AREA: (Revised this order)

UMIAT MERIDIAN

Township	Range	Section
T13N	R14E	Section 26: S ½ Section 27: s ½, NW ¼ Protracted, All Tide and Submerged Lands Shoreward of the Line Fixed by Coordinates Found in Exhibit A of the Final decree, U.S. v. Alaska, No. 84 Original Section 28: Protracted, All Tide and Submerged Lands, Excluding State Oil and Gas Lease ADL 312809 Section 33: Protracted, All Tide and Submerged Lands, Excluding State Oil and Gas Lease ADL 312809 and ADL365548 Section 34: Protracted, All Tide and Submerged Lands, Excluding State Oil and Gas Lease ADL 365548 Section 35: Protracted, All Tide and Submerged Lands, Excluding State Oil and Gas Lease ADL365548
T12N	R14E	Sections 3, 4, 9, 10, 13, 14, 15, 16, Section 17: NE ¼, N ½ SE ¼, E ½ E ½ NW ¼, E ½ NE ¼ SW ¼, Section 21: N ½ NE ¼, Sections 22, 23, 24, 25, 26, 35, and 36.

T12N	R15E	Section 16: SW ¼ Section 17: S ½ Sections 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36.
T12N	R16E	Sections 28, 29, 30, 31, 32, 33, and Section 34: W ½ NW ¼, SW ¼, and SW ¼ SE ¼
T11N	R14E	Sections 1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, and 36.
T11N	R15E	All
T11N	R16E	Section 2: SW ¼ NW ¼, SW ¼, S ½ SE ¼, Sections 3, 4, 5, 6, 7, 8, 9, 10, 11, Section 12: NW ¼, S ½ NE ¼, SE ¼, and SW ¼ Sections 13, 14, 15, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31, 32, and 33.
T10N	R14E	Sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, and 36.
T10N	R15E	All
T10N	R16E	Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 29, 30, and 31.

Those Lands in Block 605 lying northerly of the north boundary of Section 3, T12N, R14E, UM, AK (identical with line 4-5 on block 605) and lying easterly of the west boundary of sections 2 and 11, T12N, R14E, UM, AK (identical with line 5-6 on Block 605) and lying northerly of the south boundary of Section 11 and 12, T12N, R14E, UM, AK, and lying northerly of the south boundary of Section 7, T12N, R15E, UM, AK (identical with line 6-7 on block 605), within the offshore three-mile arc lines listed as State Area on the "Supplemental Official O.C.S. Block Diagram," approved 12/9/79, containing 1457.32 hectares.

Rule 1 Authorized Injection Strata and Fluids for Enhanced Recovery (Revised from AIO 4E.042)

Within the affected area and the following strata:

The Prudhoe Oil Pool strata defined as (i) the accumulations of oil that are common to and that correlate with the accumulations found in the Atlantic Richfield - Humble Prudhoe Bay State No. 1 well between the depths of 8,110 feet and 8,680 feet, and (ii) the accumulation of oil that is common to and correlates with the interval from 9,638 to 9,719 measured feet on the Borehole Compensated Sonic Log, Run 2, dated September 28, 1975, in the Atlantic Richfield-Exxon NGI No. 1 well, and that is in hydraulic communication with the gas cap of the former accumulations in the Sag River Formation. The latter accumulation is found within the following area:

Umiat Meridian.

T11N R14E: Sections: 1, 2, 11(N/2 and SE/4), 12, 13, 14(E/2), 23(NE/4), 24, 25(N/2); T11N R15E: Sections: 6, 7, 8, 17, 18, 19, 20, 29(N/2), 30(N/2);

T12N R14E: Sections 35, 36

The Put River Oil Pool strata are defined as the sandstone reservoirs within the Southern, Central and Western lobes of the Put River Sandstone Member (PRS) of the Kalubik Formation that correlate with the interval 9,638 to 9,719 measured feet on the Borehole Compensated Sonic Log, Run 2--dated September 28, 1975--in the Atlantic Richfield-Exxon NGI No. 1 well, but excluding the PRS Northern Lobe reservoirs that are in pressure communication with the Prudhoe Oil Pool gas cap in the Sag River Formation. The Put River Oil Pool is found within the following area:

Umiat Meridian.

T11N R14E Sections: 3, 4, 9, 10, 11(SW/4), 14(W/2), 15, 16, 21, 22, 23(W/2 and SE/4), 25(S/2), 26, 27, 28, 33, 34, 35, 36; T11N R15E Sections: 29(S/2), 30(S/2), 31, 32;

T10N R14E Sections: 1, 2, 3, 11, 12, 13, 14;

T10N R15E Sections: 5, 6, 7, 8, 17, 18

The Lisburne Oil Pool strata correlate with and are common to the formations found in the ARCO Prudhoe Bay State No. 1 well between the measured depths of 8,790-10,440.

The Pt. McIntyre Oil Pool strata correlate with and are common to the formations found in the Pt. McIntyre No. 11 well between the measured depths of 9,908-10,665 feet.

The West Beach Oil Pool strata correlate with and are common to the formations found in the West Beach No. 4 well between the measured depths of 14,458-14,781 feet.

The Stump Island Oil Pool enhanced recovery plans will be evaluated on a well-by-well basis in conjunction with Pt. McIntyre Oil Pool development.

The following fluids may be injected for pressure maintenance and enhanced recovery purposes:

a) Produced water and gas from PBU processing facilities;
b) Enriched hydrocarbon gas;
c) Non-hazardous water and water based fluids – (specifically seawater, source water, freshwater, domestic wastewater, equipment washwater, sump fluids, hydrotest fluids, firewater, and water with trace chemicals, and other water based fluids with a pH greater than 2 and less than 12.5 and flashpoint greater than 140 degrees F);
d) Fluids introduced to production facilities for the purpose of oil production, plant operations, plant/piping integrity or well maintenance that become entrained in the produced water stream after oil, gas, and water separation in the facility. Specifically:
    i. Freeze protection fluids;
    ii. Fluids in mixtures of oil sent for hydrocarbon recycle;
    iii. Corrosion/scale inhibitor fluids;
    iv. Anti-foams/emulsion breakers;
    v. Glycols
e) Non-hazardous glycols and glycol mixtures;
f) Fluids that are used for their intended purpose within the oil production process. Specifically:
    i. Scavengers;
    ii. Biocides

g) Fluids to monitor or enhance reservoir performance. Specifically:
   i. Tracer survey fluids;
   ii. Well stimulation fluids;
   iii. Reservoir profile modification fluids.

Rule 2 Authorized Injection Strata for Disposal (Source: AIO 4C)

Within the affected area, Class II waste fluids may be disposed by injection into strata defined as those which correlate with and are common to the strata found in the ARCO Sag River State No. 1 well between the measured depths of 3,607-6,750 feet.

Class II slurry injection from the Grind and Inject processes may be disposed into strata defined as those which correlate with and are common to the strata found in the ARCO Sag River State No. 1 well between the measured depths of 4,270-6,750 feet.

Rule 3 Fluid Injection Wells (Source: AIO 4C)

The injection of fluids must be conducted: 1) through a new well that has been permitted for drilling as a service well for injection in conformance with 20 AAC 25.005; 2) through an existing well that has been approved for conversion to a service well for injection in conformance with 20 AAC 25.280; or 3) through a well that existed as a service well for injection purposes on the date of this order.

Rule 4 Monitoring the Tubing-Casing Annulus Pressure Variations (Source: AIO4D)

The tubing and casing annuli pressures of each injection well must be monitored at least daily, except if prevented by extreme weather condition, emergency situations, or similar unavoidable circumstances. Monitoring results shall be documented and made available for AOGCC inspection.

Rule 5 Reporting the Tubing-Casing Annulus Pressure Variations (Revoked: AIO4D)

Rule 6 Demonstration of Tubing/Casing Annulus Mechanical Integrity (Source: AIO4E)

The mechanical integrity of an injection well must be demonstrated before injection begins, and before returning a well to service following a workover affecting mechanical integrity. A AOGCC-witnessed mechanical integrity test must be performed after injection is commenced for the first time in a well, to be scheduled when injection conditions (temperature, pressure, rate, etc.) have stabilized. Subsequent tests must be performed at least once every four years thereafter (except at least once every two years in the case of a slurry injection well). The AOGCC must be notified at least 24 hours in advance to enable a representative to witness mechanical integrity tests. Unless an alternate means is approved by the AOGCC, mechanical integrity must be demonstrated by a tubing/casing annulus pressure test using a surface pressure of 1500 psi or 0.25 psi/ft multiplied by the vertical depth of the packer, whichever is greater, that shows stabilizing pressure and does not change more than 10 percent during a 30-minute period. Results of mechanical integrity tests must be readily available for AOGCC inspection.

Rule 7 Well Integrity Failure (Source: AIO4E)

Whenever any pressure communication, leakage or lack of injection zone isolation is indicated by injection rate, operating pressure observation, test, survey, log, or other evidence, the Operator shall notify the AOGCC by the next business day and submit a plan of corrective action on a Form 10-403 for AOGCC approval. The Operator shall immediately shut in the well if continued operation would be unsafe or would threaten contamination of freshwater, or if so directed by the AOGCC. A monthly report of daily tubing and casing annuli pressures and injection rates must be provided to the AOGCC for all injection wells indicating well integrity failure or lack of injection zone isolation.

Rule 8 Plugging and Abandonment of Injection Wells (Source: AIO 4C)

An injection well located within the affected area must not be plugged or abandoned unless approved by the AOGCC in accordance with 20 AAC 25.105.

Rule 9 Administrative Action (Source: AIO 4D)

Unless notice and public hearing are otherwise required, the AOGCC may administratively waive or amend any rule stated above as long as the change does not promote waste or jeopardize correlative rights, is based on sound engineering and geoscience principles, and will not result in fluid movement outside of the authorized injection zone.

Rule 10 Surveillance (Source: AIO 4C and AIO 4C.001)

For slurry injection wells, a baseline temperature survey from surface to total depth, initial step rate test to pressures equal or exceeding maximum injection pressure and pressure falloff are required prior to sustained disposal injection. Regular fill depth tags are required at least once annually or as warranted following consultation with the AOGCC. Operating parameters including disposal rate, disposal pressure, annulus pressures and volume of slurry pumped must be monitored and reported according to the requirements of 20 AAC 25.432.

Also for slurry injection wells, an annual performance report will be required including rate and pressure performance, surveillance logging, fill depth, survey results, and volumetric analysis of the disposal storage volume, estimate of fracture growth, if any, and updates of operational plans. Reports shall cover the time period of October 1st through September 30th and submission must be on or before November 15th.

Rule 11 Notification (Source: AIO 4C)

The operator must notify the AOGCC if it learns of any improper Class II injection. Additionally, notification requirements of any other State or Federal agency remain the operators' responsibility.

This order shall expire 5 years after the effective date shown below.

DONE at Anchorage, Alaska and dated July 18, 2014.

Cathy P. Foerster
Chair, Commissioner

Daniel T. Seamount, Jr.
Commissioner

RECONSIDERATION AND APPEAL NOTICE

As provided in AS 31.05.080(a), within **20** days after written notice of the entry of this order or decision, or such further time as the AOGCC grants for good cause shown, a person affected by it may file with the AOGCC an application for reconsideration of the matter determined by it. If the notice was mailed, then the period of time shall be **23** days. An application for reconsideration must set out the respect in which the order or decision is believed to be erroneous.

The AOGCC shall grant or refuse the application for reconsideration in whole or in part within 10 days after it is filed. Failure to act on it within 10-days is a denial of reconsideration. If the AOGCC denies reconsideration, upon denial, this order or decision and the denial of reconsideration are **FINAL** and may be appealed to superior court. The appeal **MUST** be filed within **33** days after the date on which the AOGCC mails, **OR 30** days if the AOGCC otherwise distributes, the order or decision denying reconsideration, **UNLESS** the denial is by inaction, in which case the appeal **MUST** be filed within **40** days after the date on which the application for reconsideration was filed.

If the AOGCC grants an application for reconsideration, this order or decision does not become final. Rather, the order or decision on reconsideration will be the **FINAL** order or decision of the AOGCC, and it may be appealed to superior court. That appeal **MUST** be filed within **33** days after the date on which the AOGCC mails, **OR 30** days if the AOGCC otherwise distributes, the order or decision on reconsideration.

In computing a period of time above, the date of the event or default after which the designated period begins to run is not included in the period; the last day of the period is included, unless it falls on a weekend or state holiday, in which event the period runs until 5:00 p.m. on the next day that does not fall on a weekend or state holiday.