

DRAFT COMPATIBILITY DETERMINATION

The National Wildlife Refuge System Administration Act of 1966, as amended (16 U.S.C. 668dd-668ee) states that “The Secretary is authorized, under regulations as [s]he may prescribe, to – (A) permit the use of any area within the [National Wildlife Refuge] System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access wherever [s]he determines that such uses are compatible’ and that “... the Secretary shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety.” A compatible use is defined as “A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge.” The compatibility determination is to be a written determination signed and dated by the Refuge Manager and Regional Chief of the National Wildlife Refuge System, signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use.

Applicable compatibility regulations in 50 CFR Parts 25, 26, and 29 were published in the Federal Register October 18, 2000 (Vol. 65, No. 202, pp 62458 – 62483).

Use: Swanson River Field Natural Gas Storage

Refuge: Kenai National Wildlife Refuge

Establishing and Acquisition Authorities: The Refuge was first established as the Kenai National Moose Range by Executive Order 8979 on December 16, 1941. The boundaries were modified, purposes expanded, and name changed to Kenai National Wildlife Refuge (Refuge) under the provisions of the Alaska National Interest Lands Conservation Act (ANILCA) on December 2, 1980 (Public Law 96-487 Stat. 2371).

Refuge Purposes: The Executive Order purpose was primarily to “... protect the natural breeding and feeding range of the giant Kenai moose on the Kenai Peninsula, Alaska...”. ANILCA purposes for the Refuge include: “(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to moose, bear, mountain goats, Dall sheep, wolves and other furbearers, salmonids and other fish, waterfowl and other migratory and non-migratory birds; (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats; (iii) to ensure to the maximum extent practicable and in a manner consistent with the purposes set forth in

paragraph (i), water quality and necessary water quantity with the refuge; (iv) to provide in a manner consistent with subparagraphs (i) and (ii), opportunities for scientific research, interpretation, environmental education, and land management training; and (v) to provide, in a manner compatible with these purposes, opportunities for fish and wildlife oriented recreation.” The Wilderness Act of 1964 (Public Law 88-577) purposes are to secure an enduring resource of wilderness, to protect and preserve the wilderness character of areas within the National Wilderness Preservation System, and to administer this wilderness system for the use and enjoyment of the American people in a way that will leave them unimpaired for future use and enjoyment as wilderness.

Policy (FWS 603 2.8) directs that pre-ANILCA purposes remain in force and effect, except to the extent that they may be inconsistent with ANILCA or the Alaska Native Claims Settlement Act, and that such purposes only apply to those areas of the Refuge in existence prior to ANILCA. The Executive Order purpose to protect Kenai moose, however, is treated as complimentary to the broader ANILCA purpose of conserving fish and wildlife populations; therefore, no special attention is given the Executive Order purpose in this compatibility review process.

Sec. 4(a) of the Wilderness Act provides that the purposes of the Act are to be within and supplemental to the purposes for which National Wildlife Refuges are established and administered. These purposes are applied to the approximately 1.3 million acres of Congressionally designated wilderness within the Refuge. They are also applied to the remaining approximately 700,000 acres of Refuge lands (that are not designated as wilderness) in any way that the proposed use might affect the designated wilderness areas.

National Wildlife Refuge System Mission: The National Wildlife Refuge System Mission is “To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use: In 2005, the U.S. Fish and Wildlife Service (Service), Kenai National Wildlife Refuge, as the surface owner of the Swanson River Field (SRF) completed an Environmental Assessment and a Compatibility Determination (CD) to evaluate the Union Oil Company of California (Unocal) plans to develop portions of the SRF to facilitate expanded natural gas storage. The preferred alternative was selected in the EA authorizing the gas storage project but restricted development to existing roads, pads and pipeline corridors. The preferred alternative determined that the gas storage would not extend the industrial presence of the SRF. The Preferred Alternative in the EA also incorporated stipulations from the CD that were determined to be necessary to ensure compatibility with Refuge purposes. This current CD is a mandatory 10-year re-evaluation of that 2005 CD.

The original CD stipulations to ensure compatibility were:

- 1) Notwithstanding any other provisions of the Swanson River Field Oil and Gas Leases, the Swanson River or Soldotna Creek Unit Agreements, or any other permit or agreement, the authorization of gas storage within the Swanson River Field cannot extend the normally permitted life of the Field. Once oil or gas is no longer produced in paying quantities within the Field, gas storage within the Field must also be discontinued within 180 days and in a manner that does not impede restoration and remediation actions to be required for the area.
- 2) Infrastructure necessary to facilitate gas storage within the Swanson River Field shall be limited to those areas currently developed for oil or gas production within the Field.
- 3) No new roads, pipeline corridors, or gravel pads shall be constructed to facilitate the proposed gas storage activities.
- 4) Daily operations to facilitate gas storage shall not exceed the level of activity and use necessary to facilitate normal exploration and production activities to the degree that such changes in activities may negatively impact fish or wildlife.
- 5) Any permits or other agreements necessary to authorize gas storage may be amended at any time if necessary to ensure compatibility.
- 6) Current gas storage permits (AA-082931 - Aug. 2, 2001 and AA-084076 -May 3, 2002) must be rescinded or amended to reflect the preferred alternative for the Swanson River Natural Gas Storage Project Environmental Assessment (March 2005), and the stipulations above necessary to assure compatibility, if the storage wells are to store gas produced from outside the Lease Area.

In 2005, there were only two active gas storage wells within the SRF. Since 2005, seven additional wells have been converted to, or drilled, as gas storage wells within the SRF, four of these wells have been abandoned and one is being used to monitor gas storage containment. The remaining four wells are used to inject gas into (or produce gas out of) two distinct storage reservoirs. All four wells can be operated from the SRF's control room. No new gravel pads, gravel roads, pipeline corridors, or compressors have been constructed to accommodate gas storage.

This 2016 compatibility determination, and the 2005 environmental assessment, constitutes the evaluation process for which the Refuge may provide concurrence.

The SRF was the first substantial commercial oil discovery in Alaska, coming on line in 1957. The original lease was granted under the provisions of the Minerals Leasing Act of 1920 and was held by Chevron USA from 1957 until 1986, then by Atlantic Richfield Corporation Alaska, Inc. from 1986 to 1992, and finally by Unocal from 1992 through 2011. On January 1, 2012, Hilcorp Alaska LLC (Hilcorp) became the SRF operator replacing Unocal. The SRF occupies approximately 7,880 acres of the Refuge. Sub-surface or "down hole" operations within the SRF are administered by the BLM under the

provisions of the Minerals Leasing Act; surface use and occupancy are coordinated with the Refuge via the provisions of a Lease Agreement and through the review and approval of annual plans of development and operations. Activities within the SRF lease area for exploration and development of oil and natural gas are legal entitlements held by Hilcorp and are not subject to a compatibility review. Gas storage is not a legal entitlement under the oil and gas leases.

Numerous support facilities have been built within the SRF including approximately 43 miles of road, 60 well pads, 62 acres of building and storage areas, 5 residences, office and maintenance shop buildings, a large compressor plant for gas injection, a propane liquid extraction facility, a propane loading facility, an oil pumping station, 12 acres of gravel and sand pits, a solid waste disposal site, a pipeline complex from each well to seven tank settings (separation facilities), ten flaring stacks, an 8-inch crude and 16-inch gas pipeline across the Refuge from the SRF to the town of Nikiski (approximately 20 miles to the west), 2 steel girder bridges over the Swanson River, 2 power lines crossing the Swanson River, and a power line complex through the SRF in addition to the main feeder line coming from Nikiski within the underground pipeline corridor.

A total of 161 wells have been drilled in the SRF. Currently, there are 31 producing oil wells and an additional 5 producing gas wells. Fifty-four (54) wells have been shut-in for various reasons and might be used in the future. Sixty-four (64) wells have been permanently plugged and abandoned. There are 2 service wells that are used for water disposal injection, 4 gas storage wells, and 1 gas injection well for enhanced oil recovery.

In the early 1960s, the 16-inch gas pipeline from Nikiski to the SRF and the compression plant were constructed for the purpose of importing natural gas and injecting it in the SRF to aid in the production of oil through reservoir pressure maintenance. Over the next three decades, 331 billion cubic feet of gas were imported and injected in the SRF. In the late 1960s, oil production peaked at approximately 40,000 barrels per day from approximately 60 wells. In 2012, oil production fell to a low of approximately 450 barrels/day rate. Currently, the SRF production is around 2,000 barrels of crude oil per day from an average of 31 producing oil wells, approximately 5.6 million cubic feet of gas per day from an average of 5 producing gas wells, and the propane extraction facility is capable of producing 2,500 – 3,500 gallons per day. As of January 2016, a cumulative of 231,181,212 barrels of crude oil and 65.3 billion standard cubic feet of natural gas have been produced from the SRF.

Hilcorp has indicated that they wish to continue to store natural gas produced within the SRF as well as outside the SRF to improve gas delivery throughout the South-central Alaska gas use area. As noted above, gas injection in the SRF, from both in-field and outside sources, is not a new activity. It has been used as a normal and accepted production procedure to increase recoverability of product when pressures start to decline within the formation. In addition, Hilcorp proposes to continue to utilize gas injection for storage and delivery at a later time through existing pipeline systems. While historical gas injection, as part of normal production operations, was an accepted component of the SRF's lease and operator entitlement, gas storage is not a legal entitlement under the oil

and gas leases. The Secretary of the Interior, via Minerals Leasing Act regulations, has the discretion to authorize gas storage, but is not required to do so; therefore, when evaluating the proposal the agencies must consider other statutory requirements, including the compatibility provisions of the National Wildlife Refuge System Administration Act. Hilcorp proposes to continue to use existing pads, pipeline corridors, and roadways in pursuit of the continuation of gas storage activities.

Availability of Resources: Oil and gas activities can significantly detract from a refuge's ability to implement its primary conservation purpose and mission through re-directing biological and management staff time to work on permits, monitoring, law enforcement, remediation actions, and other related activities without compensation to replace the lost capabilities. This certainly has been true at Kenai National Wildlife Refuge where adequate funding to help administer oil and gas industrial activities has never been realized. With the gas storage proposal, however, no additional staff time above normal operations is anticipated beyond the processing of the initial request and preparation of the associated environmental documents.

Anticipated Impacts of the Use: Oil and gas industrial activities can have serious long-term impacts to fish and wildlife and habitats. These impacts come in four general areas:

- 1) conversion of habitat by cutting vegetation, placing structures, and building gravel roads and pads;
- 2) alteration of refuge management practices, such as prescribed burning (the primary use of the surface estate can change to support sub-surface development, negatively impacting the ability to manage the area for its primary conservation purposes);
- 3) loss of habitat values or fish or wildlife through oil or other hazardous substance spills; and
- 4) direct impacts of the operations to wildlife by displacing more sensitive species and causing some individual animal mortalities directly as result of field operations (such as birds hitting towers or small mammals perishing in reserve pits) and indirectly by opening up right-of-ways for additional access by hunters, fishermen, and trappers.

A 1999 CD considered such impacts and found that general oil and gas exploration and development use was not compatible with the purposes of the Refuge. This current CD acknowledges the 1999 determination and reiterates its general findings of industrial effects on the Refuge; however, it also concurs with the 2005 Environmental Assessment and resulting CD that concluded the current proposal for gas storage should not contribute additional impacts to the Refuge over entitled production operations currently permitted within the area.

Determination (check one below):

_____ Use is Not Compatible

_____ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

The stipulations contained within the 2005 Compatibility Determination remain valid and are included in this new CD.

- 1) Notwithstanding any other provisions of the SRF Oil and Gas Leases, the Swanson River or Soldotna Creek Unit Agreements, or any other permit or agreement, the authorization of gas storage within the SRF cannot extend the normally permitted life of the SRF. Once oil or gas is no longer produced in paying quantities within the SRF, gas storage within the SRF must also be discontinued within 180 days and in a manner that does not impede restoration and remediation actions to be required for the area.
- 2) Infrastructure necessary to facilitate gas storage within the SRF shall be limited to those areas currently developed for oil or gas production within the SRF.
- 3) No new roads, pipeline corridors, or gravel pads shall be constructed to facilitate the proposed gas storage activities.
- 4) Daily operations to facilitate gas storage shall not exceed the level of activity and use necessary to facilitate normal exploration and production activities to the degree that such changes in activities may negatively impact fish or wildlife.
- 5) Any permits or other agreements necessary to authorize gas storage may be amended at any time if necessary to ensure compatibility.

Justification:

The proposed gas storage operation within the SRF of Kenai National Wildlife Refuge will not measurably increase disturbance or negative impacts to fish and wildlife beyond normally permitted oil and gas field exploration and production operations. While such normally permitted activities may have significant long-term impacts on fish and wildlife, their habitats, and the Refuge's ability to manage for its mandated purposes, such operational actions are beyond the purview of a compatibility review. Since the proposed gas storage activities do not add to the permissible impacts, the threshold of compatibility has not been exceeded, and the gas storage use by itself does not materially interfere with

or detract from the Refuge's ability to meet its purposes or the National Wildlife Refuge System's Mission.

Additional review was also given for human safety considerations of the proposed action, consistent with requirements of the National Wildlife Refuge System Administration Act. There are no known new safety risks associated with gas storage beyond normal production operations. SRF operators will be operating the same compressors for storage that they are presently operating for oil and gas production, and no new or increased pressure regimes will be introduced. Over time the risk of leaks could even be reduced since stored gas will be dryer and offer less potential for corrosion within the piping and transfer systems. Gas storage wells are equipped with telemetry that allows them to be operated remotely from the SRF control room.

Additional background information, project description, and analysis of impacts is included in the 2005 Swanson River Natural Gas Storage Project Environmental Assessment.

Signature (Refuge Manager): _____
Signature and Date

Concurrence (Regional Chief): _____
Signature and Date

Mandatory 10-year Re-evaluation Date: _____