



ISSUANCE DATE AND SIGNATURE PAGE
U.S. ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT: CLASS I

Permit Number AK-11019-A

In compliance with provisions of the Safe Drinking Water Act (SDWA), as amended, (42 U.S.C. 300f 300j 9), and attendant regulations incorporated by the U.S. Environmental Protection Agency (EPA) under Title 40 of the Code of Federal Regulations (CFR), Oil Search (Alaska), LLC (OSA, or "Permittee") is authorized to construct and operate three non-hazardous underground injection control (UIC) Class I injection wells at the Pikka Unit, located along the North Slope of Alaska, in accordance with conditions set forth herein. These injection wells must be constructed from the ND-B drillsite. This permit does not authorize injection of hazardous waste as defined under the Resource Conservation and Recovery Act, as amended, (42 USC 6901) or radioactive wastes (other than naturally occurring radioactive material from pipe scale).

The Permittee may construct up to three injection wells at the Nanushuk Drillsite B identified in the application and Fact Sheet to this permit. The EPA has determined that portions of the subsurface identified as injection zones for these wells are not considered underground sources of drinking water (USDWs) under the SDWA. The formation water in the injection zone exceeds 10,000 mg/L total dissolved solids. At the site of the injection wells, EPA has determined that the interval of the Lower Torok Formation between the Upper Torok Shale down to the HRZ Shale (as correlated in the Qugruk-3A well, characterized by GR transitions as identified above) does not meet the federal definition of a USDW at 40 CFR 144.3.

This permit shall become effective at midnight on September 1, 2021 in accordance with 40 CFR § 124.15. This permit and the authorization to inject shall expire at midnight on September 1, 2031 unless terminated on a prior date.

Issuance date: September 1, 2021

/s/

Mathew Martinson, CAPT, USPHS, Chief
Permitting, Drinking Water & Infrastructure Branch
U.S. Environmental Protection Agency
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**PART I
GENERAL PERMIT CONDITIONS**

A. EFFECT OF PERMIT

The Permittee is authorized to engage in underground injection in accordance with the conditions of this permit. Notwithstanding any other provisions of this permit, the Permittee must not conduct any underground injection activity in a manner that allows the movement of fluid containing any contaminant into a USDW, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 141 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. Compliance with this permit during its term constitutes compliance for purposes of enforcement with Part C of the SDWA. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, or any other common or statutory law.

Issuance of this permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. This permit does not authorize any above ground generating, handling, storage, or treatment facilities.

B. PERMIT ACTIONS

1. Modification, Re-issuance or Termination

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§ 144.39 and 144.40. In addition, the permit can undergo minor modifications for cause as specified in 40 CFR § 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

2. Transfer of Permits

This permit is not transferable to any person except after notice to the Director on APPLICATION TO TRANSFER PERMIT (EPA Form 7520-7) and in accordance with 40 CFR § 144.38. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA. Upon request, email submittal may be approved by an EPA authorized representative.

C. SEVERABILITY

The provisions of this permit are severable, and, if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and 40 CFR § 144.5, any information submitted to the EPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed in 40 CFR § 2.203 and on the application form or instructions, or, in the case of other submissions, by stamping the words “confidential” or “confidential business information” on each page containing such information.

If no claim is made at the time of submission, the EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information).

Claims of confidentiality for the following information will be denied:

- a. The name and address of the Permittee.
- b. Information which deals with the existence, absence, or level of contaminants in drinking water.

E. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the Permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under 40 CFR § 144.34.

2. Penalties for Violations of Permit Conditions

Any person who violates a permit requirement is subject to civil penalties and other enforcement action under the SDWA. Any person who willfully violates permit requirements may be subject to criminal prosecution.

3. Continuation of Expiring Permits

- a. **Duty to Reapply:** If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. To be timely, a complete application for a new permit must be received at least 180 calendar days before this permit expires.
- b. **Permit Extensions:** The requirements of an expired permit continue in force and effect, in accordance with 5 USC § 558(c), until the effective date of a new permit, if:
 - (1) The Permittee has submitted a timely and complete application for a new permit; and
 - (2) The EPA, through no fault of Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

The Permittee must take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance

The Permittee must, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit. De-characterized waste may be appropriately disposed in a Class I non-hazardous well [refer to 40 CFR § 148.1(d)].

7. Property Rights

This permit does not convey any property rights or mineral rights of any sort, or any exclusive privilege.

8. Duty to Provide Information

The Permittee must provide to the Director any information that the Director may request to determine whether cause exists for modifying, revoking and reissuing, terminating this permit, or to determine compliance with this permit. The Permittee must also provide to the Director, upon request, copies of records, that are retained under the conditions of this permit.

9. Inspection and Entry

The Permittee must allow the Director or an EPA authorized representative(s), upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records (including logging data) that are retained under the conditions of this permit;
- c. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by SDWA, any substances or parameters at any location.

10. Records

- a. The Permittee must retain records and all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete this permit application for a period of at least five years from the date of the sample, measurement, report or application. These periods may be extended by request of the Director at any time. The Permittee may retain these records in hard copy or electronic format.
- b. The Permittee must retain records concerning the nature and composition of all injected fluids for three years after the completion of plugging and abandonment. At the conclusion of the retention period, if the Director so requests, the Permittee must deliver the records to the Director. The Permittee must continue to retain the records after the three-year retention period unless the Permittee delivers the records to the Director or obtains written approval from the Director to discard the records. The Permittee may retain these records in hard copy or electronic format.
- c. Records of monitoring information must include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The name(s) of the individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The name(s) of the individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.

- d. Monitoring of the nature of injected fluids must comply with applicable analytical methods cited and described in 40 CFR § 136.3, in Appendix I of 40 CFR Part 261, or, in certain circumstances, by other methods that have been approved by the Director.
- e. As part of the Completion Report for any new, sidetracked, or converted well, the Permittee must submit a Waste Analysis Plan (WAP) that describes the procedures to be carried out to obtain detailed chemical and physical analysis of representative samples of the waste including the quality assurance procedures used including the following:
 - (1) The parameters for which the waste will be analyzed and the rationale for the selection of these parameters;
 - (2) The test methods that will be used to test for these parameters; and
 - (3) The sampling method that will be used to obtain a representative sample of the waste to be analyzed.

At the request of the Permittee and upon approval of the EPA, the WAP submitted with the permit application may be incorporated by reference to satisfy the WAP submittal requirement.

- f. The Permittee must require a written manifest for each batch load of waste received for injection of waste streams that are not hard-piped and continuous. The manifest must contain a description of the nature and composition of all injected fluids, date of receipt, source of material received for disposal, name and address of the waste generator, a description of the monitoring performed and the results, a statement describing whether the waste(s) is exempt from regulation as hazardous waste as defined by 40 CFR § 261.4, and any information on extraordinary occurrences.

For waste streams that are hard-piped continuously from the source to the wellhead, the Permittee must retain:

- (1) Continuous measurement of the discharge rate,
 - (2) A description of the nature and composition of all injected fluids, and
 - (3) A hazardous waste determination as defined by 40 CFR § 261.4.
- g. The Permittee must note dates of most recent calibration or maintenance of gauges and meters used for monitoring required by this permit on the gauge or meter. Earlier records of calibration and maintenance must be available through a computerized maintenance history database.

11. Reporting Requirements

- a. **Planned Changes:** The Permittee must give notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility or changes in type of injected fluid(s).
- b. **Anticipated Noncompliance:** The Permittee must give notice to the Director of any significant planned changes in the permitted facility or activity that may result in noncompliance with permit requirements at least 5 business days before the change is performed. The Permittee must send this notification by email.
- c. **Compliance Schedules:** The Permittee must submit reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit to the Director no later than 30 calendar days following each schedule date contained in the compliance schedule.

12. Twenty-Four Hour Reporting

- a. The Permittee must report to the Director or an EPA authorized representative any noncompliance that may endanger health or the environment within 24 hours from the time the Permittee becomes aware of the information, including the following:
 - (1) Indication or other information that any contaminant may cause an endangerment to a USDW or may otherwise adversely affect human health.
 - (2) Noncompliance with a permit condition.
 - (3) Malfunction of the injection system.
- b. The Permittee must provide to the Director or an EPA authorized representative a written submission (in electronic format for release to the public) within five calendar days of the time the Permittee becomes aware of the circumstances. The written submission must contain a description of the noncompliance and its cause(s); the period of noncompliance including exact date and times; the anticipated timeframe the noncompliance is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee must provide email notice to affected stakeholders, such as Tribal Governments, if warranted as determined by an EPA authorized representative.

13. Other Noncompliance

The Permittee must include in the monitoring reports information regarding all instances of noncompliance not otherwise reported. The reports must contain the information listed in Permit Condition Part I E.12.b.

14. Reporting Corrections

When the Permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or in any report to the Director, the Permittee must submit such facts and/or information to EPA within 10 calendar days.

15. Signatory Requirements

- a. All permit applications, reports required by this permit, and other information requested by the Director must be signed by a principal executive officer of at least the level of vice-president, or by a duly authorized representative of that person, in accordance with 40 CFR § 144.32. A person is a duly authorized representative only if:
 - (1) The authorization is made in writing by a principal executive of at least the level of vice-president.
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
 - (3) The written authorization record is retained on-site and a copy is submitted by email to the Director. Upon request, the original is submitted to the Director or an EPA authorized representative.
- b. Changes to Authorization: If an authorization under paragraph 15.a. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph 15.a. of this section

must be submitted to the Director. The Permittee may submit this authorization with any reports, information, or applications to be signed by an authorized representative.

- c. Certification: Any person signing a document under paragraph 15.a. of this section must make the following certification:

“I certify under the penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

F. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment

The Permittee must notify the Director no later than 45 calendar days before conversion or abandonment of the well.

2. Plugging and Abandonment Report

The Permittee must plug and abandon the well as provided in the Plugging and Abandonment Plan (7520-6 Attachment E) of UIC Class I Permit Application submitted by the Permittee, which is hereby incorporated as a part of this permit. Within 60 calendar days after plugging any well, the Permittee must submit a report to the Director in accordance with 40 CFR § 144.51(p). The EPA reserves the right to change the manner in which the well will be plugged if the well is not proven to be consistent with EPA requirements for construction and mechanical integrity. The Director may require the Permittee to update the estimated plugging cost periodically.

3. Cessation Limitation

After a cessation of operations of two years, the well is considered to be in temporarily abandoned status. The Permittee must permanently plug and abandon the well in accordance with the approved plan and 40 CFR § 144.52(a)(6) within one year of entering temporarily abandoned status, unless the Permittee:

- a. Provides notice to the Director no later than two years and one month after cessation of operations, and
- b. Provides information that, to the Director’s satisfaction, demonstrates the Permittee’s intent to use the well in the future; or
- c. Describes actions or procedures, satisfactory to the Director, which the Permittee will take to ensure that the well will not endanger USDWs during the period of temporarily abandonment. These actions and procedures must include compliance with the technical requirements applicable to active injection wells unless waived by the Director.

4. Cost Estimate for Plugging and Abandonment

- a. The Permittee is required in the permit application to estimate the per well cost of plugging and abandonment of the permitted Class I UIC well(s). Please refer to the permit application (7520-6 attachment E) for the per well plugging and abandonment cost estimates(s) for the year the application is submitted. Such estimates must be based upon costs that a third party would incur to plug the wells.

- b. The Permittee must submit financial assurance and a revised estimate prior to April 30 of each year. The estimate must be made in accordance with 40 CFR § 144.62. The Director or an EPA authorized representative may approve email submittal of this requirement provided the Permittee retains the original and submits the original upon request.
- c. The Permittee must keep the latest plugging and abandonment cost estimate at the Facility or at the Permittee's central files during the operating life of the facility.
- d. When the cost estimate changes, the Permittee must amend the financial assurance instrument submitted under condition G of this permit to ensure that appropriate financial assurance for plugging and abandonment is maintained continuously.

G. FINANCIAL RESPONSIBILITY

The Permittee must demonstrate and continuously maintain financial responsibility and resources sufficient to close, plug, and abandon the underground injection operation as provided in the Plugging and Abandonment Plans and consistent with 40 CFR § 144 Subpart F, which the Director has chosen to apply. Specifically, the Permittee must meet all requirements for establishing and continuously maintaining a Plugging and Abandonment Trust Fund under 40 CFR § 144.63, including the enactment of an initial payment and subsequent annual payments into the Fund over the "pay-in-period," as defined in 40 CFR § 144.63(a).

The Permittee must not substitute an alternative demonstration of financial responsibility unless it has previously submitted evidence of that alternative demonstration to the Director and the Director notifies the Permittee that the alternative demonstration of financial responsibility is acceptable.

The Permittee must notify the Director by registered mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 business days after the commencement of the proceeding.

PART II
WELL SPECIFIC CONDITIONS

A. CONSTRUCTION

1. Casing and Cementing of Wells

The Permittee must ensure that injection occurs only into the approved injection interval through wells that are cased and cemented (see Part II.C.3., below). The Permittee must install casing and cement in accordance with a casing and cement program submitted by the Permittee for approval by the Director and in accordance with EPA UIC Class I well construction practices (40 CFR § 146.12) and all applicable State of Alaska laws and regulations. For any future Class I wells to be drilled under this permit (including replacement or sidetrack wells), in addition to the above requirements, the Permittee must provide not less than 30-calendar days written advance notice to the Director or an EPA authorized representative to witness all cementing operations.

The Permittee must construct injection wells so that the wellbores are located no closer than ¼ mile from the boundary of the Area of Review, (AOR). The wellbore of each injection well shall not be located within 2,000 feet of the wellbore of any other well at any point within the Lower Torok Formation. The boundaries of the AOR are formed by vertices at:

| Vertex Location | Latitude | Longitude |
|------------------------|-----------------|------------------|
| Northwest | 70.345549 | -150.677517 |
| Northeast | 70.346036 | -150.586983 |
| Southeast | 70.321512 | -150.586205 |
| Southwest | 70.321026 | -150.676631 |

The intersection of the wellbore and the Lower Torok Formation shall be determined during initial drilling and confirmed in the Completion Report.

The Permittee must cement the surface casing of each well back to the surface. If primary cement returns to surface are not observed, the Permittee must notify the Director or an EPA authorized representative as to the nature of any augmented testing proposed to ensure the integrity of the cement bond and adequacy of any Top Job procedure. The Permittee must cement the intermediate casing (i.e., long string casing) from the casing shoe to at least 200 feet above the bottom of the upper confining zone identified as the Upper Torok Formation.

During construction activities that involve the emplacement of cement, the Permittee must run Cement Bond/Ultrasonic Imaging or other logs and pressure tests (e.g., leak off test and/or formation integrity test) for both the surface and production casings to confirm zonal isolation and verify casing integrity. The Permittee must include all well logs performed on the well, and interpretation for each well log, with the Completion Report (see requirement Part II C. 1., below).

The casing, cementing, and well construction must comply with the procedures outlined in the well construction plan contained in the permit application. Should a change(s) be required to the previously approved casing and cementing program due to unanticipated conditions, the Permittee must notify the Director or an EPA authorized representative in writing (hard copy or email) as to the nature of the change(s) and the unanticipated conditions requiring the change. This notification must be provided no less than 30 days prior to the start of well construction. The Permittee must not construct the proposed

change without first receiving the written approval from the Director or an EPA authorized representative.

2. Tubing and Packer Specifications

The Permittee must inject fluids through wells containing tubing with a packer. The Permittee must install tubing and packer in accordance with the procedures in the well construction plan submitted by the Permittee to the Director or an EPA authorized representative. In the event that a packer needs to be set or reset at a revised depth at a later date, the Permittee must perform a mechanical integrity test, submit the necessary information as determined by an EPA authorized representative, and obtain authorization from the Director or an EPA authorized representative prior to resuming injection. The Permittee must set the packer no more than 200 feet measured depth above the top of the injection interval unless an alternative placement is specified and authorized by the Director or an EPA authorized representative.

3. New Wells in the Area of Review (AOR)

If any development or service wells are drilled in the future that penetrate the injection interval within the AOR, these wells must have casing cemented to the formation throughout the entire section from 200 feet TVD below to 200 feet TVD above the (proposed, revised or updated) injection zone as identified in the permit application and by a professionally licensed geologist. Injection shall not commence if this requirement is not met, unless approval is otherwise provided by the Director. No wellbore may be constructed within 2,000 feet of the injection wells authorized by this permit within the Lower Torok Formation, unless otherwise approved by the Director or an EPA authorized representative.

B. CORRECTIVE ACTION

The Permittee identified no wells that intersect the injection interval within the AOR. Therefore, the EPA requires no corrective action to prevent injected fluids from moving above the confining zone.

If the Permittee later discovers that a well or wells within the AOR require(s) corrective action to prevent fluid movement, then the Permittee must inform EPA upon such discovery and provide a corrective action plan for the Director or an EPA authorized representative to review and approve. If EPA or the Permittee discovers that fluids have moved above the upper confining zone along a wellbore within the AOR, then the Permittee must cease injection until the fluid movement problem can be diagnosed and corrected.

C. WELL OPERATION

1. Requirements Prior to Commencing Injection

Prior to commencing injection into a newly constructed, converted, or sidetracked injection well, the Permittee must conduct the following completion activities, below. If these requirements have been demonstrated in the 180 days prior to completion of the newly constructed, converted, or sidetracked injection well, they need not be repeated.

- a. Demonstration of mechanical integrity as described in Part II.C.2., to the satisfaction of the Director or an EPA authorized representative. This includes both a mechanical integrity test of the inner annulus (MITIA) and a fluid movement test. The Permittee must notify the EPA at least 10 business days prior to conducting the initial mechanical integrity test so that an EPA authorized representative may witness the test.
- b. Submittal of the results of a step-rate injection test to determine the fracture gradient. Upon approval by the Director or an EPA authorized representative, the Permittee may submit the results of a previously conducted step-rate injection test from the same geologic formation to satisfy this requirement.

- c. Identification of the depth to the Upper Confining Zone, Injection Zone, and Lower Confining Zone, as performed by a professionally licensed Geologist.
- d. Submittal of The Completion Report within 60 days of the completion of the well construction, sidetrack, or conversion.

The Permittee may not inject until the Director or an EPA authorized representative has granted approval to inject.

The Permittee must submit the information required in parts a., b., c., and d., above, as part of a Completion Report (EPA Form 7520-18) within 60 days after completing a well construction, conversion, or sidetrack. Following submission of the Completion Report, the Director or an EPA authorized representative will inform the Permittee whether injection may take place into the newly constructed well.

2. Mechanical Integrity

a. Standards

The injection well must maintain mechanical integrity pursuant to 40 CFR § 146.8.

b. Prohibition of Injection without Demonstration of Mechanical Integrity

This permit prohibits injection at the permitted well(s) unless the Permittee has demonstrated mechanical integrity by conducting the following tests and submitting the results to the Director:

- (1) The Permittee must demonstrate there is no significant leak in the casing, tubing, or packer by conducting a mechanical integrity test of the inner annulus (MITIA). To start the test, the Permittee must bring the annulus to a starting pressure of at least 4,000 pounds per square inch (psi), but not to exceed 70% of the minimum yield strength of the casing. The Permittee must observe the pressure in the tubing, inner annulus, and (if present) outer annulus of the well for 30 minutes. The results of the test must satisfy either (i) or (ii) below:
 - i. the inner annulus pressure does not decline by more than 10% of the starting pressure during the test period and the loss in the second half of the test period is less than one half of the loss in the first half of the test period, or
 - ii. the inner annulus pressure does not decline by more than 2% of the starting pressure during the test period and the loss in the second half of the test period is less than the loss in the first half of the test period.

If the well fails to satisfy (i) or (ii) during the first 30-minute test period, the test may be extended by an additional 30 minutes to demonstrate stabilization.

The Permittee must notify the Director or an EPA authorized representative 30 calendar days prior to commencement of the MITIA. After the initial test, the Permittee must conduct an MITIA annually if the well is active and once every two years if the well is inactive until expiration of the permit. The Director or an EPA authorized representative may extend the due date for the MITIA up to three months. Also, the Director or an EPA authorized representative may revise (either increase or decrease) the frequency with which the Permittee must conduct the MITIA.

- (2) The Permittee must conduct an approved fluid movement test to detect fluid migration outside of the permitted injection intervals at an injection pressure at least equal to the average continuous injection pressure observed at the well in the previous six months.

Approved fluid movement test methods include, but are not limited to: tracer surveys, temperature survey logs (conducted after a 12-hour shut-in, at a minimum, unless otherwise authorized by the EPA authorized representative), noise logs, oxygen activation/water flow logs, borax pulse neutron logs, or other equivalent logs. The Permittee must notify the Director or an EPA authorized representative 30 calendar days prior to commencement of the fluid movement test and request approval for any testing procedure not previously used to satisfy this requirement. The Permittee must initially conduct a fluid movement test and submit the logs of this test upon completion of the well and prior to initiation of injection at a new, converted, sidetracked well. After the initial test, the Permittee must conduct a fluid movement test and submit test logs and results every two years while the well is active until expiration of the permit. The Director or an EPA authorized representative may extend the due date of this testing requirement up to three months. Also, the Director or an EPA authorized representative may revise (either increase or decrease) the frequency with which the Permittee must conduct a fluid movement test.

- (3) The Permittee must conduct tubing inspection tests to monitor condition, thickness, and integrity of the downhole tubing. The Permittee must notify the Director or an EPA authorized representative 30 calendar days prior to commencement of the tubing inspection test and request approval for any testing procedure not previously used to satisfy this requirement. The Permittee must conduct a tubing inspection test and submit test logs and results every two years while the well is active until expiration of the permit. The Director or an EPA authorized representative may extend the due date for the tubing inspection up to three months. Also, the Director or an EPA authorized representative may revise (either increase or decrease) the frequency with which the Permittee must conduct the tubing inspection test.

c. Terms and Reporting

- (1) The Permittee must submit a copy of the log(s) and a descriptive and interpretive report of the mechanical integrity tests identified in Part II. C. 2. b. (2) and (3) to EPA within 45 calendar days of completion in hard copy or electronic format, unless waived by an EPA authorized representative. Immediately after well logging activities, the Permittee must submit a copy of any log(s) to an EPA authorized representative, if requested. This includes logging events associated with construction activities and mechanical integrity testing.
- (2) The Permittee must demonstrate mechanical integrity by the MITIA in Part II. C. 2. b. (1) prior to resuming injection if, at any time, the tubing is removed from the well or a loss of mechanical integrity becomes evident during operation. The Permittee must report the results of such tests within 45 calendar days of completion of the tests.
- (3) The Director will notify the Permittee of the acceptability of the mechanical integrity demonstration within 10 business days of receipt of the results of the mechanical integrity tests. The Permittee may continue to inject during this review period. If the Director does not notify the Permittee within 10 business days, the Permittee may continue to inject.
- (4) In the event that the well fails to demonstrate mechanical integrity during a test or a loss of mechanical integrity occurs during operation, the Permittee must halt injection immediately and must not resume injection until the Director or an EPA authorized representative gives approval to resume injection.
- (5) The Director may, by written notice, require the Permittee to demonstrate mechanical integrity at any time.

3. Injection Zone

The Permittee may only inject fluid into the designated injection zone. The injection zone is defined as

the Lower Torok Formation. The Permittee may not inject at a pressure that causes the propagation of fractures in the confining zones. The Upper Torok Formation and HRZ are identified as the Upper and Lower Confining Zones, respectively.

4. Injection Pressure Limitation

The Permittee must not inject at a pressure that initiates new fractures or propagates existing fractures in the confining zones. The Permittee must not inject at a pressure exceeding the maximum injection pressure of 4,000 psi, measured at the wellhead, except as follows:

- a. If a plant is shut-down or outage (unrelated to fluid injection activities) occurs.
- b. If a well stimulation is required.

In such instances, the Permittee must notify the Director or an EPA authorized representative by telephone or email within 24 hours of the initial exceedance of 4,000 psi and must submit a written incident report not later than 10 calendar days thereafter.

The Permittee must never inject above the working pressure for which the well components are rated.

5. Injection Rate Limitation

Total volume for injection may not exceed 8,500 barrels in any 24-hour period.

6. Annulus Pressure Limitation

The Permittee must fill the tubing-casing annulus with a corrosion inhibiting solution. The Permittee must not allow the positive surface pressure in the tubing-casing annulus to exceed 1,500 psi. The annulus pressure must be sufficiently different from the injection pressure that pressure communication can be easily detected.

The authorization of up to 1,500 psi on the inner annulus is not intended to allow the Permittee to continue to injection in the event of a loss of mechanical integrity or if pressure communication exists between the inner annulus and the tubing or outer annulus.

7. Injection Limitation

This permit only authorizes the Permittee to inject non-hazardous fluids. De-characterized waste must be disposed of appropriately (refer to 40 CFR § 148.1(d)). Fluids generated from construction, repair, operation and maintenance of Class I injection wells and associated injection well piping may be disposed in this Class I non-hazardous injection well. No radioactive wastes are authorized to be injected, other than naturally occurring radioactive material (NORM) from pipe scale and/or radioactive tracer beads. If third party wastes are accepted, the third party must certify the fluids are eligible for injection pursuant to the terms of this permit.

8. Waivers to UIC Program Requirements

EPA is waiving the following Class I UIC requirements. EPA has the authority to waive these requirements under Title 40 CFR §144.16, as these wells will not inject through, into, or above any USDW:

- a. Compatibility of Formation and Injectate [40 C.F.R. §§ 146.12 (e) (4)-(5) and 146.14 (a) (8)]: Based upon the injection history taking place on the North Slope of Alaska and the performance of nearby Class I injection wells injecting into the same stratigraphic sequence, EPA waives the requirement to sample and characterize formation fluids and the rock matrix in order to determine whether or not they are compatible with the approved injectate stream.

- b. Injection Zone Fracturing [40 C.F.R. § 146.13 (a) (1)]: EPA waives the prohibition against fracturing the injection zone so long as fractures do not propagate into the upper and lower confining zones. The Upper Confining Zone is defined as the Upper Torok Formation, the Lower Confining Zone is defined as the HRZ. This waiver does not authorize the use of these injection wells for hydrocarbon production activities, and the permittee shall not inject for any purpose other than the emplacement of non-hazardous waste for permanent disposal.
- c. Ambient Monitoring Above the Confining Zone (40 CFR § 146.13(b)(1) and (4) and 40 CFR § 146.13(d)): EPA waives the requirement to monitor the strata overlying the confining zone for fluid movement since the Permittee's application demonstrates that there are no improperly sealed, completed, or abandoned wellbores within the AOR.

D. MONITORING

1. General Monitoring Requirements

The Permittee must ensure that all wells authorized by this permit are monitored 24 hours per day by trained and qualified personnel while injection is occurring.

Samples and measurements collected for the purpose of monitoring must be representative of the monitored activity.

2. Monitoring Continuous Waste Injection

The Permittee must install, maintain, and use monitoring devices to continuously monitor injection pressure and rate for those streams that are hard-piped and continuous, and to monitor the pressure of non-freezing solution in the tubing-casing annulus. Calculated flow data or periodic monitoring are not acceptable except as a back-up system if the primary continuous injection rate device malfunctions or power outage occurs.

3. Monitoring Batch Waste Injection

The Permittee must continuously staff and visually monitor batch waste injection pumping operations at the well site. During these pumping operations, the Permittee must maintain a chronological record of the time of day, a description of the waste pumped, injection rate and pressure, and tubing-casing annulus pressure. If during injection the annulus pressure exceeds the limitation set in Part II.C.6. of this permit, the operator must notify EPA pursuant with Part I.E.12. The person in charge of the pumping operations must be identified on the pumping record.

4. Alarms and Operational Modifications

The Permittee must install, continuously operate, and maintain alarms to detect excess injection pressures and significant changes in annular fluid pressure. These alarms must be sufficient to alert operators in all operating spaces including, but not limited to, the control room. The Permittee must install and maintain an emergency shutdown system to respond to losses of internal mechanical integrity as evidenced by changes in the annular pressure.

The Permittee must submit plans and specifications for the alarms to the Director or an EPA authorized representative prior to the initiation of injection.

E. REPORTING REQUIREMENTS

1. Quarterly Reports

The Permittee must submit quarterly reports by email to the Director or an EPA authorized

representative. Reports must be submitted within 30 days of the end of each calendar quarter. A calendar quarter ends after the last day of the 3rd, 6th, 9th, and 12th month of the year (1st, 2nd, 3rd, and 4th quarters, respectively). The reports must include the following information:

- a. Monthly average, maximum, and minimum values for injection pressure, rate, and volume must be reported on INJECTION WELL MONITORING REPORT (EPA Form 7520-8).
- b. Hourly monitoring data in electronic spreadsheet format approved by the Director. This data will include average and maximum values for: injection pressure, inner annulus pressure, and injection rate.
- c. Graphical plots of continuous injection pressure, inner annulus pressure, and injection rate on the same plot.
- d. Physical, chemical, and other relevant characteristics of the injected fluid.
- e. A list of all batch injections. The list must show time and date, waste generating company, source location, type of waste, volume, transport company/driver, name of authority confirming waste(s) as Class I eligible.
- f. Descriptions of any well workover or other significant maintenance of downhole or injection-related surface components.
- g. Results of all mechanical integrity tests performed since the previous report, including any maintenance-related tests and “practice” tests.
- h. Reports of changes in annular pressures in any wells in the AOR that could be indicative of pressure communication between those wells and the UIC Class I injection wells authorized by this permit.
- i. Results of any other tests required by the Director.

2. Annual Reports

The Permittee must submit to the Director an annual performance report for the period of October 1 through September 30. This report must be submitted by November 30 of each year. (For example, injection data from October 1, 2021, through September 30, 2022, should be reported by November 30, 2022). The annual performance report must include, but not be limited to:

- a. Average injection rate and pressure performance.
- b. Surveillance logging and results, if applicable tests have been performed in the reporting period.
- c. The most recent depth measurement (i.e., fill depth) taken within the reporting period.
- d. Volumetric analysis of the disposal storage, if any updates have been made,
- e. Annual injection volumes.
- f. Estimated fracture growth and any updates to fracture model analyses.
- g. Indications of communication between the injection wells and other wells in the AOR, if such events have occurred,
- h. Updates of any operational plans that affect injection well operations,
- i. An overview of all waste generated by third parties and injected into wells authorized by this permit.

Some information may not be available every year, if those activities did not take place during the reporting period (examples: surveillance logging, fill depth, and survey results).

3. Report Certification

All reports and notifications required by this permit must be signed and certified in accordance with Part I.E.15; stored and maintained in electronic format at the Permittee's Facility or company headquarters; submitted by email to the Director or an EPA authorized representative; and, upon request by the Director or an EPA authorized representative, submitted as a hard copy to the following address:

U.S. Environmental Protection Agency Region 10
Ground Water and Drinking Water Section, UIC Program (19-H16)
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101

**APPENDIX A
REPORTING FORMS**

PDF copies of following forms are available on the EPA's web site at:

<https://www.epa.gov/uic/underground-injection-control-reporting-forms-owners-or-operators>

- 7520-7 APPLICATION TO TRANSFER PERMIT
- 7520-8 INJECTION WELL MONITORING REPORT
- 7520-18 COMPLETION REPORT FOR INJECTION WELLS