



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File: SDWB
3051 ATCdeepening.docx

September 24, 2019

Mr. Warren H.W. Lee, P.E.
President
Hu Honua Bioenergy, LLC
28-283 Sugar Mill Road
Pepeekeo, Hawaii 96783
[via wlee@huhonua.com only]

Dear Mr. Lee:

SUBJECT: HU HONUA BIOENERGY, LLC
UNDERGROUND INJECTION CONTROL (UIC)
UIC APPLICATION NO. UH-3051
GRANTED APPROVAL-TO-CONSTRUCT/MODIFY (ATC/M)
THE THREE (3) INJECTION WELLS

The Department of Health (DOH) Safe Drinking Water Branch (SDWB) UIC Program has reviewed your revised UIC application (application) received on August 6, 2019, proposing to deepen the three (3) injection wells that were originally approved to a depth of 400 feet below ground surface (bgs) to a new depth of 800 feet bgs.

This ATC/M is hereby granted to you, the applicant, strictly based on the following 23 conditions. These conditions, unless identified as a recommendation, are enforceable under Hawaii Administrative Rules (HAR), Sections 11-23-07(c) and (d). Enforcement may include, and not be limited to, monetary penalties and corrective action paid by the applicant.

1. Only the information, specifications, and plans that were provided in the revised UIC application, received on August 6, 2019, are applicable. All other types or forms of information/materials are not applicable unless acknowledged and approved by this ATC/M;
2. This ATC/M is only applicable to the **three (3)** injection wells of approximate diameter and depth below ground surface as described below:

Well Number	Diameter	Total Depth (bgs)
1, 2, & 3	24-in. borehole having sections of 20-in. solid casing, 20-in. louvered casing and 24-in. uncased (open) hole	800 ft. (each well)

3. Any modification or revision to the injection wells' particulars, including the facility and application, shall not occur unless such proposals are first submitted to the UIC program

for review, concurrence, and written approval under this ATC/M. Any modification, revision, or construction involving the injection wells done without written authorization will constitute a violation of HAR, Chapter 11-23;

4. A geologist shall be involved from the start of injection well construction/modification to monitor the drilling on a daily basis, either directly or by detailed field reporting to the geologist;
5. Weekly reports, on a per day basis, shall be made to the UIC program throughout the duration of active injection well drilling. The reports shall include, but not be limited to, daily well diameter and depth, major or significant geologic or hydrogeologic conditions encountered by the drilling, and preliminary injection test findings.

Reports shall be concise, professionally prepared or reviewed, organized consistently, and purposeful. Reports shall be transmitted via email to sdwb@doh.hawaii.gov on Mondays following every work week. A suggested weekly reporting format is enclosed;

6. The applicant is responsible to identify all drinking water sources around the injection wells in order to prevent injection well siting within one-quarter mile of any existing drinking water source. Identifying drinking water sources may require field activities as well as records research. Noncompliance with this requirement may result in an improper injection well siting needing corrective action by the applicant which includes proper backfilling and abandonment of the injection well;
7. Comply with applicable conditions stipulated in HAR, Section 11-23-10, such as the requirement of at least a 50-foot buffer zone between the bottom of the injection well and the top of the volcanic aquifer when establishing an injection well in the caprock formation;
8. If an artesian groundwater condition is encountered during the injection well drilling/construction, drilling shall immediately stop and not proceed until the artesian condition is assessed by the DOH. The applicant is required to notify the DOH for an assessment. An artesian groundwater condition may warrant a redesign of the injection well in order to protect the artesian aquifer as an underground source of drinking water. For reference, artesian aquifer requirements and restrictions are described under HAR, Section 11-23-10;
9. If a void, such as a lava tube or solution cavity, 3-feet or more in diameter or vertical measurement is encountered during injection well drilling/construction, drilling shall immediately stop and not proceed until the void is assessed by the DOH. The applicant is required to notify the DOH for an assessment. A void may warrant a redesign of the injection well in order to prevent unacceptable migration of the injectant or to prevent direct injection into the void. For reference, voids are described under HAR, Section 11-23-09 (f);
10. The injection wells shall be constructed in a manner that will satisfactorily address unwanted mixing of saline injectant with the overlying freshwater aquifer as required by HAR, Section 11-23-09(e). Unless satisfactorily addressed, a permit to operate will not be

considered. To address this requirement, the injection interval shall be confined to the saline formation or evidence that the injection activity does not produce an adverse mixing effect on the freshwater aquifer must be demonstrated to the DOH's satisfaction;

11. Once the injection depth is established and injection well construction/modification is completed, a minimum 12-hour continuous injection test at design rates shall be conducted for the injection well. During injection well construction/modification, preliminary injection testing over extended durations before the injection well is fully built is recommended, if practicable. Preliminary injection test results may provide a progressive estimate of injection capacities which tend to diminish with the installation of the well casing and the annular backfill;
12. Injection wells shall not be used for any purpose other than the testing proposed in the application or to meet the test requirements of this ATC/M. For an anticipated injection test duration exceeding 36 hours, submit a request with justification to obtain DOH concurrence and approval before proceeding;
13. You are required to notify Messrs. Jaime Rimando or Norris Uehara by email at sdwb@doh.hawaii.gov **one (1) week** prior to all injection well tests that involve a discharge into an injection well. You will be informed if DOH personnel will be present to witness the injection well testing. If you conduct the injection well test without notifying the DOH, you may be required to redo the injection well test under proper witnessing;
14. If groundwater within the influence of the injection well is used for injection testing, the effects of groundwater withdrawal on the injection well's capacity should be addressed in the injection test results. The injection well's capacity should not include influences due to groundwater withdrawal for injection testing;
15. The ocean bottom temperatures before, during and after injection well testing shall be continuously collected at the existing ocean bottom-temperature monitoring stations to evaluate temperature changes related to the injection activity. Other testing requirements are specified in the enclosed final report form which relate to groundwater characteristics. The tests include tidal fluctuations and tidal efficiency, groundwater sampling and analyses, and salinity/conductivity, temperature and dissolved oxygen profiling. Notify the DOH at least one (1) week in advance of the scheduled sampling and profiling events;
16. After the injection tests are completed, the injection wells shall be capped or secured in a manner that will prevent their use. The injection wells shall not be operated or receive any type of discharge until a UIC permit to operate is issued which authorizes the specific use;
17. Operation of the injection wells is not automatically authorized by this ATC/M. Furthermore, construction and testing of the injection wells does not guarantee that the injection wells will be authorized for operation under a UIC permit. Depending on the construction and testing information, and the compliance status with other DOH regulatory requirements, a UIC permit may or may not be issued;

18. The fully constructed injection wells must demonstrate satisfactory performance. A UIC permit to operate may not be issued for an injection well that cannot successfully support the proposed discharge quantity;
19. The applicant may request issuance of an interim permit to operate one (1) or two (2) injection well(s) before completing the three (3) injection well system. All applicable construction, testing, and reporting requirements of this ATC/M shall be satisfied before an interim permit is considered. The DOH will condition an interim permit to further investigate and evaluate injectant fate, or address concerns created by operating an incomplete injection well system;
20. The injection wells shall be constructed to allow for the following continuous or periodic, permit-required activities related to operating and maintaining an injection well: injection well access, injection well depth and diameter measurement, injectant flow measurement (quantity) metering, injectant pressure measurement when applicable (metering), and injection performance testing;
21. Pursuant to HAR, Section 11-23-13, submit the final report using the enclosed "Final Report Format for New or Modified Injection Well" outline. The final report shall be written and signed by a geologist and a professional engineer, including the P.E. stamp. The engineer and geologist shall be responsible for monitoring the proper construction of the injection well and for obtaining the information needed to complete the final report;
22. **The final report is due by 4:30 pm (HST) on September 23, 2021.** The final report shall be fully complete and satisfactory. Unless the final report is submitted by the due date, this ATC/M automatically expires and is void. A late final report may subject the applicant to an enforcement action/penalty or corrective measures, including a permit reapplication. If more time beyond the due-date is needed to complete the final report, a written request with reasons for a time extension must be submitted at least 60 calendar days before the due-date. Time extensions are not guaranteed, and if granted, may contain restrictive conditions; and
23. Backfilling and abandonment of an injection well, should such an activity become necessary, whether during construction or after full well completion, may only occur under instructions from the DOH. An abandonment application must first be submitted, and specific abandonment instructions will be issued by the DOH. Drilling contractors should not backfill and abandon an injection well under their own discretion.

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If you have any questions about the final report, or the processing of your application, please contact Messrs. Jaime Rimando or Norris Uehara of the SDWB UIC Program at (808) 586-4258 or call from Big Island the direct toll-free number 974-4000, ext. 64258.

Sincerely,



MARIANNE ROSSIO, P.E., ACTING CHIEF
Environmental Management Division

JR:bbe

Enclosures: 1. Final Report Format for New or Modified Injection Well with Signatory and Certification Statement Form
2. Weekly Report Format

c: Mr. Dennis Poma, P.E., ACSI (w/encls.) [via dennis.poma@acsihawaii.com only]
Mr. Tom Nance, P.E., TNWRE, (w/encls.) [via tom@tnwre.com only]
Ms. Theresa McGeehan-Takiue, SDWB, Hilo (w/encls.) [via email only]

**FINAL REPORT FORMAT FOR
NEW OR MODIFIED INJECTION WELL
UNDERGROUND INJECTION CONTROL (UIC)
UIC APPLICATION NO. UH-3051**

For Office Use

1. General Information:
 - a) Facility Name:
 - b) Address:
 - c) Applicant [Permittee]:

2. Physical Characteristics of the Area:
 - a) Location and accessibility:
 - b) Climate:
 - c) Topography:
 - d) Geologic and foundation conditions:
 - e) Earthquake considerations:
 - f) Flood potential including tsunami inundation zones:
 - g) Conformance with local land-use planning and zoning regulations:
 - h) Sensitive environment natural or community-related:

3. Injection Well System:
 - a) Actual number of injection wells constructed or modified:
 - b) Date of construction or modification:
 - c) Security from unauthorized access:
 - d) Site plan (drawn to scale) showing location of constructed or modified injection wells:
 - e) As-built drawings of each injection well highlighting any changes from the permit application:

4. Hydrogeologic Characteristics:
 - a) Well log (geologic profile) by geologist:
 - i. General formations: e.g., organic, fill, soil, saprolite, decomposed rock, sedimentary, lagoonal, marine, alluvial, coral, dune, beach, pyroclastic, ash, pahoehoe, `a`a, ponded lava, tuff, etc.:
 - ii. Physical and structural characteristics of the formations encountered. The following characteristics shall be used in the descriptions: color, hardness (competency), degree of weathering, qualitative degree of fracturing or consolidation, qualitative degree of vesiculation or porosity, unified soil classification for soils, volcanic series or lithologic formation for rock, petrologic terminologies for rock and cinder, lava type, and the differentiation between soil and rock units;

- b) Injection testing:
 - i. Preliminary injection test results, if performed. The results shall include a description of the test, the test findings, and decisions based on the findings;
 - ii. Minimum 12 hours of continuous injection testing for all wells.
 - iii. Complete results of injection testing including maximum injection capacity of each well and hydraulic conductivity of the injection formation. Injection test results shall be shown graphically with the related data. Include an evaluation and discussion on the injection influence on adjacent wells during injection testing.
- c) Groundwater characteristics: (if encountered)
 - i. Initial water level, and subsequent water level as fluctuations occur (below ground surface and corresponding elevation per msl):
 - ii. Tidal fluctuations and tidal efficiency:
 - iii. Continuous profile of dissolved oxygen, temperature and salinity (maximum 5-foot sample intervals if done with discrete sampler) for all the wells obtained before the introduction of any foreign fluids. The profiling shall represent stabilized conditions without influence or restriction from any well casing and shall extend to the bottom of the boring. Profiling within solid casing strings are typically not acceptable;
 - iv. Water samples collected from each distinct zone of significantly different salinity concentration levels. Water samples shall be analyzed using EPA or EPA equivalent standards and methods for the following parameters:

Parameter	EPA Method
chlorides	325
conductivity (specific conductance)	120
dissolved oxygen	360
field pH	150
field temperature	170
nitrate+nitrite as (N)	353
Total Dissolved Solids	160

- 5. Special considerations to be addressed by this report:
 - a) Discuss if approval to construct conditions 6 through 9 were encountered.
 - b) Discuss compliance with HAR Section 11-23-09(e).
 - c) Present ocean floor temperature monitoring results and conclusion.
 - d) Present recalibrated & validated groundwater model results and conclusion.
- 6. Attach an original Signatory and Certification Statement sheet signed and dated by the permittee or legal representative.

7. Preparers' signature: The final report shall be signed by the geologist and licensed engineer and shall bear the engineer's stamp.
8. Submit the final report by email at sdwb@doh.hawaii.gov and by U.S. Postal mail with the original signed report and Signatory and Certification Statement.

**SIGNATORY AND CERTIFICATION STATEMENT
FOR UNDERGROUND INJECTION CONTROL (UIC) SUBMITTALS**
*Submitted Statement shall bear an original signature and date.
Photocopy signatures are unsatisfactory.*

Facility Name: _____

e-Permitting Submission No. (if applicable): _____

UIC No. (if assigned): _____

Please check one:

- I certify that for a municipality, I am a principal executive officer or ranking elected official.
- I certify that for a state, non-federal or other public agency, I am a principal executive officer or ranking elected official.
- I certify that for a federal agency, I am the chief executive officer of the agency, or I am the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
- I certify that I am a general partner for a partnership.
- I certify that I am the proprietor for a sole proprietorship.
- I certify that I am a trustee for a trust.
- I certify that for a corporation/association of apartment owners/home owners association, I am the President, Vice President, Secretary or Treasurer of the corporation/association of apartment owners/home owners association and in charge of a principal business function, or I perform similar policy or decision making functions for the corporation/association of apartment owners/home owners association.
- I certify that for a corporation, I am the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), and authority to sign documents has been assigned or delegated to me in accordance with corporate procedures.
- I certify that for a limited liability company (LLC), I am the Manager or a Member authorized to make management decisions for the LLC and am in charge of a principal business function, or I perform similar policy or decision making functions for the LLC.

I certify under 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 submitted 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.

Signature: _____ Date: _____

Name (Print): _____ Title: _____

Company Name: _____

Address: _____

Phone Number: _____ Fax Number: _____

Email: _____

INJECTION WELL CONSTRUCTION WEEKLY REPORT FORM

(Send to: Safe Drinking Water Branch email: sdwb@doh.hawaii.gov)

Report Date: _____

Project Name: _____

Reported By: _____

UIC No.: _____

Driller: _____

Injection Well No.: _____

Date	Depths Drilled (feet bgs)	Diameter (inches)	Casing Depth (feet)	Remarks*
	from: to:			
	from: to:			
	from: to:			
	from: to:			
	from: to:			
	from: to:			

* Remarks should include formation & materials encountered, anomalies, injection considerations and indications