

Central Valley Regional Water Quality Control Board

14 December 2018

Mr. Jesse Holman
Managing Member
LDD Energy, LLC
PO Box 21988
Bakersfield, California 93390

CERTIFIED MAIL
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NOTICE OF APPLICABILITY, CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER NUMBER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS FOR OIL FIELD DISCHARGES TO LAND, GENERAL ORDER NUMBER THREE, LDD ENERGY, LLC, WEBBER LEASE, MIDWAY SUNSET OIL FIELD, KERN COUNTY

On 9 October 2018, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a document titled, *LDD Energy, LLC Order R5-2017-0036, Response August 29, 2017 Staff Comments regarding LDD Energy, LLC, Waste Discharge Requirements General Order Number Three for Oil Field Discharges to Land*. A previous version of the document entitled, *LDD Energy, LLC Order R5-2017-0036, Waste Discharge Requirements General Order Number Three for Oil Field Discharges to Land*, was submitted to the Central Valley Water Board on 24 July 2017 (herein both documents are collectively referred to as the Notice of Intent or NOI).

The NOI describes LDD Energy, LLC's (LDD or discharger) intention to obtain regulatory coverage under Order R5-2017-0036, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Three (General Order Three). LDD operates the Webber Lease in the Midway Sunset Oil Field in section 34, T30S, R22E, MDB&M in Kern county (Lease or facility). The Lease has one unlined surface impoundment (pond) that receives discharges of oil field produced wastewater (produced wastewater or discharge).

This letter (Notice of Applicability or NOA) serves as formal notice that General Order Three is applicable to LDD's discharges at the Lease. Order Number **R5-2017-0036-011** is hereby assigned to all produced wastewater discharges to the pond. LDD should become familiar with all the requirements, time schedules, prohibitions, and provisions of General Order Three, and the associated Monitoring and Reporting Program R5-2017-0036 (MRP).

Cleanup and Abatement Order No. R5-2015-0711 (CAO) was issued to LDD on 23 July 2015 for the Lease. This letter serves as formal notice that the CAO is hereby rescinded.

General Order Three regulates the discharge of produced wastewater into ponds. As stated in Water Code section 13263, all discharges of waste into waters of the state are privileges, not rights. General Order Three does not create a vested right for LDD to continue the discharge. Failure to prevent conditions that create or threaten to create pollution or nuisance or cause degradation of groundwater, will be sufficient reason to modify, revoke, or enforce the provisions of General Order Three, as well as prohibit further discharge.

In 2006, the Central Valley Water Board, the State Water Resources Control Board (State Water Board), and regional stakeholders began a joint effort to address salinity and nitrate problems in the region and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. The CV-SALTS effort might effect changes to the Basin Plan that would necessitate the re-opening of General Order Three.

FACILITY SPECIFIC REQUIREMENTS

1. LDD shall maintain exclusive control of the discharge and shall comply with all of the requirements and timelines of General Order Three and the MRP.
2. The required annual fee specified in the annual billing from the State Water Board shall be paid until coverage for the Lease under General Order Three is officially terminated. LDD must notify the Central Valley Water Board in writing to request termination.
3. Under Discharge Specifications, Item B.2., General Order Three states: *“The discharge flow shall not exceed actual maximum monthly average produced wastewater flow to the pond between 26 November 2004 and 26 November 2014. The discharge flow also shall not exceed the maximum design flow of the Facility’s limiting unit as described by the technical data in the NOI.”* The “design capacity” of the pond is identified in the NOI as being approximately 53,120 cubic feet with the two feet of freeboard. LDD has provided an estimation of the maximum monthly average flow into the pond as being approximately 8,518 barrels. This volume shall not be exceeded. Any increase in discharge volume that would exceed the maximum monthly average flow constitutes a facility expansion requiring an evaluation under the California Environmental Quality Act (CEQA).
4. LDD shall not discharge produced wastewater outside of the pond except for permitted dust control use. Regarding the use of produced wastewater for dust control, the NOI states, *“Dust control is not practiced on this Lease. We shall submit justification for this if the practice becomes necessary.”* If LDD intends to apply produced wastewater for dust control, a proposed management plan as described in Provision E.6 of General Order Three must be submitted at least **90 days prior** to the anticipated discharges.
5. Provision 3 of General Order Three states that **by 18 March 2019**, LDD shall submit written certification that it has installed acceptable flow metering at a location or locations to ensure the accurate measurement of all discharge flows. An engineering alternative may be used if approved in writing by the Executive Officer.
6. **By 18 February 2019**, LDD shall, pursuant to Provision E.4. of General Order Three, submit either:

- a. The results of a hydrogeological investigation demonstrating that there is no groundwater beneath the pond and that produced wastewater and constituents associated with other approved wastes discharged at the Lease will not migrate into areas where there is groundwater with designated beneficial uses. Upon the written concurrence of the investigation results by the Executive Officer, this provision shall be considered satisfied; or,
- b. If there is first encountered groundwater underlying the Lease or the Executive Officer does not concur with the results of the investigation in Provision E.4.a., above, the Discharger shall demonstrate that the natural background groundwater quality for the Lease meets the Sources of Drinking Water Policy exception criteria and/or parallel exception criteria outlined in General Order Three (Findings 22 through 24) and thus the current Basin Plan groundwater beneficial uses are eligible for de-designation in accordance with the compliance schedule provided in Tasks 1 through 10 of Provision 4.b.

The NOI references a letter that pertains to an Aquifer Exemption Application that is being reviewed by the California State Water Resources Control Board (State Board). The letter is dated 19 June 2018, and titled, *Preliminary Concurrence on the Proposed Aquifer Exemption, Midway Sunset Oil Field, Kern County* (Preliminary Concurrence). The NOI includes an excerpt from the Preliminary Concurrence which states, "...the groundwater contained in the concurrence area is not expected to be put to beneficial use because it contains petroleum hydrocarbons." The NOI concludes that fluids from the pond will not impact any groundwater with beneficial uses, because the area surrounding the pond has been exempted through the Aquifer Exemption process.

Central Valley Water Board staff reviewed the Preliminary Concurrence, but do not agree with the conclusions presented in the NOI. The geologic formations considered in the Preliminary Concurrence are the Potter Sands, Spellacy Sands, Miocene Shales, and Antelope Sands. The Preliminary Concurrence specifically states, "*State Water Board staff make no decision regarding the proposal for the Tulare B zone of the Tulare Formation at this time.*" Based on the Preliminary Concurrence, State Board staff have reason to believe that there is groundwater with beneficial uses in the Tulare Formation in Midway Valley, which according to the NOI, is the geologic formation that the Lease and ponds are situated in.

Additionally, a preliminary concurrence is not a final decision. Any geologic formations included in the Preliminary Concurrence will not be exempt until a final concurrence is issued by State Board and the United States Environmental Protection Agency.

According to the NOI, first encountered fluids in the sediments underlying the ponds are hydrocarbon bearing. Mud logs and geophysical logs from wells near the pond show that shale, sand, and clay beds are encountered in the first few hundred feet of sediments underlying the pond. The NOI states that the initial sediments are underlain by tar sands, which are encountered at approximately 375-500 feet below ground surface (bgs).

Central Valley Water Board staff reviewed data on the State Board website from the groundwater ambient monitoring and assessment (GAMA) program and found that a municipal well lies approximately 3.29 miles north of the pond. Analytical data from samples taken from the municipal well show that hydrocarbons are generally not detected in water from the well. The potential for the sediments underlying the Lease to contain hydrocarbons must be further assessed.

Based on Central Valley Water Board's staff review, Provision 4 of General Order Three still must be satisfied. LDD must either submit a demonstration, supported by hydrogeologic data, that the first fluids encountered in the sediments underlying the Lease are hydrocarbon bearing and that percolate from the pond will not migrate, or obtain a Basin Plan Amendment. If LDD chooses to obtain a Basin Plan Amendment, then LDD must follow the time schedule in General Order Three.

If LDD chooses to make a demonstration, as described above, then that demonstration must be provided by **18 February 2019**. Also, the demonstration must be made by an appropriately licensed professional (such as a professional geologist or engineer), and include appropriate hydrogeological information.

7. LDD shall operate and maintain the pond sufficiently to protect the integrity of containment and berms and prevent overtopping and/or structural failure. Discharges not authorized by the General Order and not described in the NOI must be reported to Central Valley Water Board. The discharge of wastes other than those described in the NOI is prohibited. If the method of waste disposal changes, LDD must submit a Report of Waste Discharge (Form 200).
8. Regarding solids reuse on the Lease, the NOI states, "*The solids generation rate is less than 0.1% of the oil we are sampling. Currently the sand is separated and contained in tanks. When we need to transfer the solids or apply to land will do prior to rainy season. When able will confirm that solids are non-hazardous. ... There is no record of any solids leaving the Lease.*" Dischargers proposing to reuse solids for road mix shall submit a solids management plan. LDD shall, pursuant to Provision E.7 of General Order Three, submit a solids management plan for approval by the Executive Officer at least **180 days prior** to solids reuse. This plan shall include the information required by Provision E.7. If solids are transported off-site, then they must be sent to an appropriately permitted facility. LDD shall note that the construction of berms on the Lease qualifies as solids reuse.
9. Order Number 2014-0057-DWQ (NPDES General Permit CAS000001) specifies requirements for discharges of storm water associated with industrial activities. According to information provided with the NOI, the discharge is contained within the pond. The NOI reports that berms surround the tank farm and provide secondary containment for runoff. The NOI states, "*Storm water is avoided by drainage berms that are inspected after every storm event. ... Water does not leave the ponds.*"

Based on the information submitted in the NOI, coverage under NPDES General Permit CAS000001 is not needed at this time. If the conditions or regulatory policies change, the Lease may need to obtain coverage under NPDES General Permit CAS000001.

The MRP associated with General Order Three requires extensive monitoring requirements. Failure to comply with the requirements in General Order Three and the MRP could result in an enforcement action as authorized by provisions of the California Water Code. A copy of General Order Three and the MRP is included with the enclosures to this notice. A copy can also be found online at:

https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2017-0036.pdf.

The MRP includes monitoring and reporting of chemicals and additives. LDD should become familiar with those requirements. The Central Valley Water Board will review the MRP periodically and revise requirements when necessary. The MRP can be modified if LDD provides enough data to support the proposed changes. If monitoring consistently shows no significant variation in the magnitude of a constituent concentration or parameter after a statistically significant number of sampling events, LDD may request the MRP be revised by the Executive Officer to reduce monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for a reduction in monitoring frequency.

LDD must comply with the Central Valley Water Board's Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991 (Standard Provisions). A copy of the Standard Provisions is included with the enclosures to this notice.

A copy can be found online at:

https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/std_provisions/wdr-mar1991.pdf.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review this action in accordance with Water Code section 13320 and CCR, title 23, division 3, chapter 6, section 2050 and those that follow. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Notice of Applicability, except that if the thirtieth day following the date falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day.

SUBMISSIONS

Documents associated with the Lease, that are less than 50 MB must be sent via electronic mail to: centralvalleyfresno@waterboards.ca.gov. Documents that are 50 MB or larger can be mailed to the Central Valley Water Board office at 1685 E Street, Fresno, CA 93706.

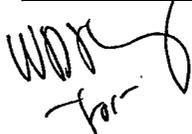
LDD shall submit electronic PDF copies of all work plans, reports, analytical results, and groundwater elevation data over the internet to the State Water Board Geographic Environmental Information Management System database (GeoTracker) at:

http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml. LDD shall note that GeoTracker only accepts PDF files.

A frequently asked question document for GeoTracker can be found at:
http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf.

Electronic submittals shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site. Uploads to GeoTracker shall be completed on or prior to the due date. The GeoTracker site Global I.D. number that is associated with this NOA is:
T10000006776.

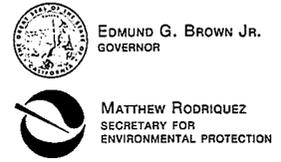
Please review the attached memorandum. If you have any questions regarding this matter, please contact Rebecca T. Asami of this office at (559) 445-5548 or by email at:
rebecca.asami@waterboards.ca.gov.



Patrick Pulupa
Executive Officer

Enclosures: 14 December 2018 Memorandum
General Order Three
1 March 1991 Standard Provisions

cc: Cameron Campbell, Chief Deputy of the Division of Oil Gas and Geothermal Resources,
Bakersfield (NOA and Memorandum only, via email)
Keith Nakatani, Oil and Gas Program Manager, Clean Water Action
(NOA and Memorandum only, via email)
Andrew Grinberg, National Campaigns Special Projects Manager, Clean Water Action
(NOA and Memorandum only, via email)
Bill Allayaud, California Director of Government Affairs, Environmental Working Group
(NOA and Memorandum only, via email)



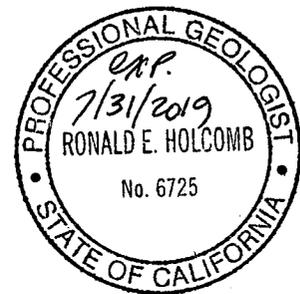
Central Valley Regional Water Quality Control Board

TO: Clay Rodgers
Assistant Executive Officer

W. Dale Harvey
Supervising Engineer
RCE No. 55628

FROM: Ronald E. Holcomb
Senior Engineering Geologist
PG No. 6725

Rebecca T. Asami
Engineering Geologist



DATE: 14 December 2018

SUBJECT: NOTICE OF INTENT REVIEW, CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, ORDER R5-2017-0036, WASTE DISCHARGE REQUIREMENTS GENERAL ORDER FOR DISCHARGES TO LAND, GENERAL ORDER THREE, LDD ENERGY, LCC, WEBBER LEASE, MIDWAY SUNSET OIL FIELD, KERN COUNTY

On 9 October 2018, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a document titled, *LDD Energy, LLC Order R5-2017-0036, Response August 29, 2017 Staff Comments regarding LDD Energy, LLC, Waste Discharge Requirements General Order Number Three for Oil Field Discharge to Land*. A previous version of the document titled, *LDD Energy, LLC Order R5-2017-0036, Waste Discharge Requirements General Order Number Three for Oil Field Discharge to Land*, was submitted to the Central Valley Water Board on 24 July 2017 (herein both documents are collectively referred to as the Notice of Intent or NOI).

The NOI describes LDD Energy, LLC's rationale for obtaining regulatory coverage under Order R5- 2017- 0036, Waste Discharge Requirements General Order for Oil Field Discharges to Land, General Order Three (General Order Three). This memorandum provides a summary of the NOI.

Location

LDD Energy, LLC (LDD or discharger) operates the Webber Lease in the Midway Sunset Oil Field in section 34, T30S, R22E, MDB&M in Kern county (Lease or facility).

SUBMITTED INFORMATION

Lease Description

The Lease utilizes a single unlined surface impoundment (pond) for disposal of oil field produced wastewater (produced wastewater or discharge) by evaporation and percolation. Oil field produced fluids from petroleum production wells are temporarily stored in tanks on the Lease. Emulsion breakers are added to the tanks to assist in separating the oil and water. Produced wastewater is discharged to the pond and oil is placed in the sales tank.

LDD has implemented a Spill Prevention Control and Countermeasure Plan (SPCCP) on the Lease. The Lease tanks and pond are surrounded by berms, which provide secondary containment and prevent produced wastewater from comingling with storm water. The pond dimensions follow:

Length (feet)	Width (feet)	Depth (feet)	Surface Area (square feet)	Volume (cubic feet)
83	64	12	5,312	63,744

Discharge Characteristics

As per Discharge Specifications, Item B.2., of General Order Three, the discharge volume shall not exceed maximum monthly average of produced wastewater flow to the pond between 26 November 2004 and 26 November 2014. According to information submitted in the NOI, with two feet of freeboard, the pond has a capacity of approximately 53,120 cubic feet. The NOI states that since November 2004, the average monthly volume of produced wastewater discharged to the pond was 1,483 barrels (bbls) and maximum monthly average flow to the pond was approximately 8,518 bbls. This flow volume shall not be exceeded.

LDD must account for pond capacity, precipitation, regional evaporation rates, and required freeboard when calculating discharge volumes. The discharge volume shall not exceed the maximum flow as per the ponds' design, as described in the Notice of Intent. The pond must maintain two feet of freeboard.

The discharge was sampled on 28 December 2016, and yielded the following selected analytical results:

Constituent	Concentration	Units
Total Dissolved Solids (TDS)	29,000	Milligrams per Liter (mg/l)
Conductivity (EC)	36,000	Micromohs per centimeter (μ mohs/cm)
Chloride	18,000	mg/l
Boron	35	mg/l
Sodium	9,300	mg/l

Regional Characteristics

The Lease is located in the Telephone Hills in the northern portion of the Midway Sunset Oil Field. The Telephone Hills are just north of Midway Valley. Average monthly rainfall in the region ranges from 0 to 2.3 inches per month. Pan evaporation in the region occurs at a rate ranging from 0.01 to 8.66 inches per month. Average annual precipitation is approximately 6.41 inches. According to the NOI, several seasonal drainages cross the Lease.

The region is defined by significant folding and faulting. The Telephone Hills are a series of southeasterly plunging folds. The folds impede percolate from the pond from migrating east towards the Central Valley. The McKittrick Thrust Fault is a low angle reverse fault which extends from the northern to the southern edge of the Midway Sunset Oil Field. According to the NOI, the McKittrick Thrust Fault isolates fluids from migrating west.

Sediments underlying the Lease consist of alluvial sediments and the Tulare Formation which is predominantly shale with interbedded sands. The NOI states that the pond is constructed in Tulare Formation outcrops. Geophysical logs and mud logs submitted with the NOI show that, in the sediments beneath the pond, the lithology consists of interbedded shales and sands, with tar sands encountered at depths of approximately 350 feet below ground surface (bgs). According to the NOI, produced water on the Lease is sourced in the Tulare Formation, with potential future water sources from deeper zones including the Olig Formation and the Antelope Shale.

POTENTIAL THREAT TO WATER QUALITY

General Order Three regulates oil field discharges where first encountered groundwater does not support beneficial uses as identified in the *Water Quality Control Plan for the Tulare Lake Basin, Third Edition, Revised May 2018* (Basin Plan). General Order Three applies to discharges that began prior to November 2014, are primarily discharges from oil operations to land, and exceed the maximum oil field salinity limits for electrical conductivity, chloride, and boron contained in the Basin Plan.

Provision 4 of General Order Three

Provision 4 of General Order Three requires that LDD either:

- 1) demonstrate that “...*there is no groundwater beneath the Facility discharge areas and that produced wastewater and constituents associated with other approved wastes discharged at the Facility will not migrate into areas where there is groundwater with designated beneficial uses,*”;
or
- 2) obtain a Basin Plan amendment under the timeline outlined in General Order Three Provision 4.b.

According to the NOI, the pond qualifies for General Order Three because 1) there is no groundwater 2) there is no evidence of groundwater 3) TDS concentrations in produced wastewater from the wells exceed 20,000 mg/l, 4) there are no monitoring wells near the Lease, and 5) the NOI includes an explanation of nearby faults. The NOI states, *“The beds underlying the LDD ponds dip east-northeast; surface drainage is to the northeast. Elk Hills prevent surface water migration into aquifers in the Central Valley. Any subsurface fluid migration from the ponds would likely follow the geologic structure to the east, draining down dip and along the axis of a syncline to the southeast of the site.”*

Based on what was submitted in the NOI, it appears that groundwater flow direction in the Lease area is generally southeast (towards Midway Valley), following the axis of a syncline. In a letter dated 29 August 2017, Central Valley Water Board staff requested that LDD submit information demonstrating that percolate from the pond would not impact water in Midway Valley. As stated above, Provision 4 of General Order Three requires LDD to demonstrate that percolate from the pond will not migrate to areas that contain groundwater with beneficial uses.

In response to Central Valley Water Board’s staff request, the NOI references a letter that pertains to an Aquifer Exemption Application that is being reviewed by the California State Water Resources Control Board (State Board). The letter is dated 19 June 2018, and titled, *Preliminary Concurrence on the Proposed Aquifer Exemption, Midway Sunset Oil Field, Kern County* (Preliminary Concurrence). The NOI includes an excerpt from the Preliminary Concurrence which states, *“...the groundwater contained in the concurrence area is not expected to be put to beneficial use because it contains petroleum hydrocarbons and also contains constituents such as boron and total dissolved solids at concentrations that limit its suitability for agricultural, domestic, and other beneficial uses.”* The NOI concludes that fluids from the pond will not impact any groundwater with beneficial uses by entering the Midway Valley because the region has been exempted through the Aquifer Exemption process.

Central Valley Water Board staff reviewed the Preliminary Concurrence but do not agree with statements in the NOI regarding the potential for percolate from the pond to migrate. The Preliminary Concurrence pertains to specific geologic formations. The Preliminary Concurrence states, *“Pending the results of the public comment process, State Water Board staff preliminarily concur with the exemption proposal for the Potter Sands, Spellacy Sands, Miocene Shales, and Antelope Sands (concurrence area). State Water Board staff make no decision regarding the proposal for the Tulare B zone of the Tulare Formation at this time.”* The geologic formations included in the Preliminary Concurrence are separated from the Tulare Formation by the San Joaquin Formation and are stratigraphically below the Tulare Formation. Based on the Preliminary Concurrence, State Board staff have reason to believe that there is groundwater with beneficial uses in the Tulare Formation in Midway Valley, which according to the NOI, is the geologic formation that the Lease and ponds are situated in. Also, a *preliminary* concurrence is not a final decision. Therefore, any geologic formations included in the Preliminary Concurrence are *not* exempt and will not be exempt until a final concurrence is issued by State Board and the United States Environmental Protection Agency.

According to the NOI, first encountered fluids in the logs underlying the Lease are hydrocarbon bearing. The NOI includes data from geophysical and mud logs. Several of the logs show that, in wells near the pond, layers of shale, sand, and clay are encountered in the first few hundred feet, followed by tar sands at approximately 375-500 feet bgs (i.e.: API 02913018). In a well which lies about 358 feet southwest of the pond, tar sands occur at approximately 550 feet bgs. Central Valley Water Board staff reviewed data on the State Board groundwater information system website (GAMA), and found that a municipal well lies approximately 3.29 miles north of the pond. Analytical data from samples taken from the well show that water from the well is generally non-detect for hydrocarbons and oil production constituents. LDD must confirm that first encountered fluids in the sediments underlying the Lease are hydrocarbon bearing.

SUMMARY

Information submitted in the NOI indicates that the pond meets the requirements for coverage under General Order Three. However, Provision 4 of General Order Three still must be satisfied. LDD must demonstrate that 1) the first encountered fluids contain hydrocarbons or groundwater without beneficial uses as designated by the Basin Plan and 2) the discharge will not migrate to waters of beneficial use or pursue a Basin Plan amendment following the time schedule outlined in General Order Three.

If LDD chooses to pursue a Basin Plan Amendment, then LDD must adhere to the time schedule described in General Order Three. LDD should note that the time schedule requires certain tasks to be completed by certain dates. If LDD cannot obtain a Basin Plan Amendment within the time frame described in General Order Three, then the discharge must cease.

If LDD chooses to demonstrate that first encountered fluids are hydrocarbon bearing and the discharge will not migrate to waters of beneficial uses, then that demonstration must be provided. Hydrogeological information that supports the demonstration must be provided. The demonstration must be conducted and signed by an appropriately licensed professional, such as a professional geologist.