



North Carolina Department of Environment and Natural Resources

Division of Water Quality  
Charles Wakild, P.E.  
Director

Pat McCrory  
Governor

John E. Skvarla, III  
Secretary

**DATE OF PERMIT**

KAROL KAIN GRAY – VICE CHANCELLOR FINANCE & ADMINISTRATION  
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL  
CB#1000 – 302A SOUTH BUILDING  
CHAPEL HILL, NORTH CAROLINA 27599-1000

Subject: Permit No. WQ0023896  
UNC-CH Bingham Facility  
Wastewater Irrigation System  
Orange County

Dear Vice Chancellor Gray:

In accordance with your permit major modification request received August 18, 2011, and subsequent additional information received November 14, 2011 and January 31, 2013, we are forwarding herewith Permit No. WQ0023896 dated **DATE OF PERMIT**, to The University of North Carolina at Chapel Hill for the operation of the subject wastewater treatment and irrigation facilities.

The modifications to the subject permit are as follows:

- Decommissioning of the existing 8-inch gravity sewer; the ultraviolet (UV) disinfection system; the secondary effluent storage basin pump station; the 75,843 gallon lined effluent storage lagoon; and the 2.12 acre irrigation area composed of one field with 16 nozzles.
- Refurbishment of the 171,500 gallon lined effluent storage lagoon into a 125,724 gallon clay lined secondary effluent storage basin.
- Reconstruction of the existing animal wastewater treatment system storage basin and irrigation pump station.
- Construction and operation of an 8-inch gravity sewer system, a liquid sodium hypochlorite disinfection system, a 525 gallon chlorine contact tank; a secondary effluent pump station and 5.72 acres of irrigation area.

Please note that on August 5, 2009, Session Law 2009-406, entitled “An Act to Extend Certain Government Approvals Affecting the Development of Real Property Within the State,” was enacted by the General Assembly and signed into law. The Act, known as the Permit Extension Act of 2009, extends the expiration date of certain government approvals and permits. In addition, Session Law 2010-177 extended the Act by another year. Permit No. WQ0023896 falls within the scope of this Act and is therefore being extended until September 30, 2015. A renewal application must still be submitted six months in advance of the extended expiration date.

AQUIFER PROTECTION SECTION  
1636 Mail Service Center, Raleigh, North Carolina 27699-1636  
Location: 512 N. Salisbury St., Raleigh, North Carolina 27604  
Phone: 919-807-6464 \ FAX: 919-807-6496  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)

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This permit shall be effective from the date of issuance until September 30, 2015, shall void Permit No. WQ0023896 issued February 12, 2007, and shall be subject to the conditions and limitations as specified therein. Please pay particular attention to the monitoring requirements listed in Attachments A, B and C for they may differ from the previous permit issuance. Failure to establish an adequate system for collecting and maintaining the required operational information shall result in future compliance problems.

For your convenience, customized electronic copies of your facility's NDMR and NDAR-1 reporting forms are available for download at: <http://portal.ncdenr.org/web/wq/aps/lau/reporting>.

**Please note the following permit conditions have been removed since the last permit issuance dated February 12, 2007:**

- Old Condition I.1. – This condition has been removed because it is no longer needed.
- Old Condition I.2. – This condition has been removed because it is inherently covered under new Condition III.1.
- Attachment A – PPI 001 has been removed because the previously permitted modifications were certified as complete on May 28, 2009.

**Please note the following permit conditions have been modified since the last permit issuance dated February 12, 2007:**

- Condition I.4. (Old Condition I.5.) – This condition has been modified to require submission of the scaled site map within 60 days of construction of monitoring wells MW-3, MW-4, MW-5 and MW-6.
- Condition I.6. (Old Condition I.6.) – This condition has been modified to require waste level gauges in both the wet weather storage and secondary effluent storage basins.
- Condition III.6. (Old Condition III.6.) – This condition has been modified to require that all irrigation equipment shall be tested and calibrated at least once per permit cycle.
- Attachment A – This attachment has been modified to include two new sampling parameters for PPI 002, Total Residual Chlorine and Total Phosphorus, which shall be sampled weekly and four times per year, respectively. In addition, the sampling frequency for BOD<sub>5</sub>, Chloride, Fecal Coliform, Ammonia, Nitrate, Total Kjeldahl Nitrogen, Total Dissolved Solids and Total Suspended Solids has increased from three times per year to four times per year. This attachment has also been amended to include the sampling parameters and frequencies for the four new surface water monitoring sampling stations.
- Attachment B – This attachment has been modified to include the four proposed irrigation fields.
- Attachment C – This attachment has been modified to include the four new monitoring wells, MW-3, MW-4, MW-5 and MW-6. In addition, at the Permittee's request, the sampling frequencies have increased from three times per year to four times per year. Please note that the annual sampling requirement for Volatile Organic Compounds remains, however, this parameter shall now be sampled in December.

**Please note the following permit conditions are new to your permit and require your attention:**

- Condition I.3. – This condition requires the Permittee to install four new monitoring wells, MW-3, MW-4, MW-5 and MW-6, prior to operation of the modified permitted facilities.
- Condition I.5. – This condition requires the Permittee to temporarily abandon monitoring well MW-2 within 60 days of completion of construction and initial sampling of monitoring wells MW-3, MW-4, MW-5 and MW-6.
- Condition II.11. – This condition requires any landowner who owns land within the compliance boundary, but who is not the Permittee, to execute and file with the County Register of Deeds an easement with the requirements listed in the said Condition. Please note the previous permit was subject to this requirement under 15A NCAC 02L .0107(f), therefore, this condition is intended to voice this rule.
- Condition IV.5. – This condition requires that the Permittee monitor four surface water sampling stations on a semi-annual basis.
- Condition IV.9. – This condition requires the Permittee to keep a record of all residuals removed from this facility.
- Condition IV.10. – This condition requires the Permittee to keep a log of all maintenance at the facility.
- Condition IV.15. – This condition requires that the Permittee submit an annual report summarizing the performance of the facility.
- Condition IV.16. – This condition requires the Permittee to provide public notification if untreated or partially treated wastewater is discharged to surface waters of the State.
- Condition VI.8. – This condition notes that this permit is subject to revocation or unilateral modification within 60 days notice from the Division if the terms in 15A NCAC 02T .0110 are violated.
- Condition VI.9. – This condition notes that this facilities in this permit may not be expanded if the Permittee exemplifies any of the criteria in 15A NCAC 02T .0120(b).

If any parts, requirements or limitations contained in this permit are unacceptable, the Permittee has the right to request an adjudicatory hearing upon written request within 30 days following receipt of this permit. This request shall be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings at 6714 Mail Service Center, Raleigh, NC 27699-6714. Unless such demands are made, this permit shall be final and binding.

One set of approved plans and specifications is being forwarded to you. If you need additional information concerning this permit, please contact Nathaniel Thornburg at (919) 807-6453 or [nathaniel.thornburg@ncdenr.gov](mailto:nathaniel.thornburg@ncdenr.gov).

Sincerely,

***DRAFT***

Charles Wakild, P.E.

cc: Orange County Health Department  
Raleigh Regional Office, Aquifer Protection Section  
Charles D. Riley, Jr., PE – McKim & Creed  
Technical Assistance and Certification Unit  
Permit File WQ0023896  
Notebook File WQ0023896

**NORTH CAROLINA**  
**ENVIRONMENTAL MANAGEMENT COMMISSION**  
**DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**  
**RALEIGH**  
**WASTEWATER IRRIGATION SYSTEM PERMIT**

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In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations

PERMISSION IS HEREBY GRANTED TO

**The University of North Carolina at Chapel Hill**  
Orange County

FOR THE

operation of a 3,556 gallon per day (GPD) wastewater treatment and irrigation facility consisting of the:

continued operation of a well filter treatment system consisting of: a 3,240 gallon hydro-pneumatic storage tank; a 2,250 gallon manganese oxidation tank; a potassium permanganate tank; an 86 gallon diaphragm tank; three manganese filters; a 4,000 gallon filter backwash tank with two 20 GPM 0.5 hp pumps each rated at 23 feet of TDH; and all associated piping, valves and appurtenances; the

continued operation of: an 8,000 gallon baffled septic tank with an effluent filter; a 2,100 gallon septic tank effluent lift station with two 20 gallon per minute (GPM) 0.5 horsepower (hp) pumps rated at 23 feet of total dynamic head (TDH) and audible/visual high water alarms; a 4,000 gallon recirculation tank with two 55 GPM 0.5 hp pumps rated at 33 feet of TDH; two AdvanTex AX100 textile media packed bed filters; a 60° v-trapezoidal flume with ultrasonic level sensing; and all associated piping, valves and appurtenances; the

continued operation and subsequent decommissioning of: approximately 320 linear feet of 8-inch gravity sewer; an ultraviolet (UV) disinfection system with two lamps; an 80 GPM floating transfer pump station; a 75,843 gallon lined effluent storage lagoon; a 2.12 acre irrigation area composed of one field with 16 nozzles; and all associated piping, valves and appurtenances; the

continued operation and subsequent refurbishment of: a 171,500 gallon lined effluent storage lagoon into a 125,724 gallon clay lined secondary effluent storage basin to be used as supplemental wet weather storage; and all associated piping, valves and appurtenances; the

reconstruction and operation of: the existing animal wastewater treatment system storage basin into a 1,122,440 gallon clay lined wet weather storage basin; the existing animal wastewater treatment system irrigation pump station into a 1,495 gallon wastewater pump station with two 158 GPM submersible pumps and audible/visual high-water alarms; and all associated piping, valves and appurtenances; and the

construction and operation of: approximately 540 linear feet of 8-inch gravity sewer; a liquid sodium hypochlorite disinfection system with a 55 gallon chemical storage tank and two 7.1 gallon per hour (GPH) positive displacement peristaltic chemical feed pumps; a 525 gallon chlorine contact tank; a secondary effluent pump station with two 80 GPM submersible pumps; a 5.72 acre irrigation area composed of four drip irrigation zones with a total of 19,068 emitters each rated at 2 GPH; and all associated piping, valves and appurtenances

to serve the UNC-CH Bingham Facility, with no discharge of wastes to surface waters, pursuant to the application received August 18, 2011, and subsequent additional information received by the Division of Water Quality, and in conformity with the project plans, specifications, and other supporting data subsequently filed and approved by the Department of Environment and Natural Resources and considered a part of this permit.

This permit shall be effective from the date of issuance until September 30, 2015, shall void Permit No. WQ0023896 issued February 12, 2007, and shall be subject to the following specified conditions and limitations:

## **I. SCHEDULES**

1. In accordance with 15A NCAC 02T .0116, upon completion of construction and prior to operation of the modified permitted facility, a certification (attached) shall be submitted from a licensed North Carolina Professional Engineer certifying that the modified permitted facility has been installed in accordance with this permit, Division approved plans and specifications, and other supporting documentation, including the location of all monitoring wells as applicable. If this project is to be completed in phases and partially certified, the Permittee shall retain the responsibility to track further construction approved under the same permit, and shall provide a final certificate of completion once the entire project has been completed. Mail the Certification to the Division of Water Quality, Aquifer Protection Section, 1636 Mail Service Center, Raleigh, NC 27699-1636.
2. The Raleigh Regional Office, telephone number (919) 791-4200, shall be notified at least 48 hours in advance (excluding weekends and holidays) of operation of the installed modified facilities such that an in-place inspection can be made. Notification to the Aquifer Protection Section's regional supervisor shall be made from 8:00 a.m. until 5:00 p.m. on Monday through Friday, excluding State Holidays.
3. The Raleigh Regional Office, telephone number (919) 791-4200, shall approve monitoring wells MW-3, MW-4, MW-5 and MW-6 prior to installation, and the monitoring wells shall be installed prior to operation of the modified permitted facilities. The regional office shall be notified at least 48 hours prior to the construction of any monitoring well, and such notification to the Aquifer Protection Section's regional supervisor shall be made from 8:00 a.m. until 5:00 p.m. on Monday through Friday, excluding State Holidays. The monitoring wells shall be constructed such that the water level in the monitoring well is never above or below the screened (open) portion of the well at any time during the year, and in accordance with 15A NCAC 02C .0108. The general location and name for each monitoring well is marked on Figure 1.
4. Within 60 days of completion of monitoring wells MW-3, MW-4, MW-5 and MW-6, the Permittee shall submit two original copies of a site map with a scale no greater than 1-inch equals 100 feet; however, special provisions may be granted upon prior approval for large properties. At a minimum, the map shall include the following information:
  - a. The location and identity of each monitoring well.
  - b. The location of major components of the waste disposal system.
  - c. The location of property boundaries within 500 feet of the disposal areas.
  - d. The latitude and longitude of the established horizontal control monument.
  - e. The elevation of the top of the well casing (i.e., measuring point) relative to a common datum.
  - f. The depth of water below the measuring point at the time the measuring point is established.
  - g. The location of compliance and review boundaries.
  - h. The date the map is prepared and/or revised.

Control monuments shall be installed in such a manner and made of such materials that the monument will not be destroyed due to activities taking place on the property. The map and any supporting documentation shall be sent to the Division of Water Quality, Aquifer Protection Section, 1636 Mail Service Center, Raleigh, NC 27699-1636.

5. Within 60 days of completion of construction and initial sampling of monitoring wells MW-3, MW-4, MW-5 and MW-6, monitoring well MW-2 shall be temporarily abandoned by securing the wellhead to prevent access. In accordance with 15A NCAC 02C .0108(c)(7), the monitoring well shall have a lockable cap in order to reasonably ensure against unauthorized access and use. A compatible watertight cap or seal shall be placed onto the riser pipe of the monitoring wells to prevent potential contamination from entering the well.
6. Gauges to monitor waste levels in the wet weather storage and secondary effluent storage basins shall be installed after their rehabilitation and prior to their operation. Caution shall be taken not to damage the integrity of the liner when installing the gauges.
7. No later than six months prior to the expiration of this permit, the Permittee shall request renewal of this permit on official Division forms. Upon receipt of the request, the Division will review the adequacy of the facilities described therein, and if warranted, will renew the permit for such period of time and under such conditions and limitations as it may deem appropriate. Please note Rule 15A NCAC 02T .0105(d) requires an updated site map to be submitted with the permit renewal application.

## **II. PERFORMANCE STANDARDS**

1. The subject non-discharge facilities shall be effectively maintained and operated at all times so there is no discharge to surface waters, nor any contravention of groundwater or surface water standards. In the event the facilities fail to perform satisfactorily, including the creation of nuisance conditions due to improper operation and maintenance, or failure of the irrigation areas to adequately assimilate the effluent, the Permittee shall take immediate corrective actions including Division required actions, such as the construction of additional or replacement wastewater treatment or irrigation facilities.
2. This permit shall not relieve the Permittee of their responsibility for damages to groundwater or surface water resulting from the operation of this facility.
3. All wells constructed for purposes of groundwater monitoring shall be constructed in accordance with 15A NCAC 02C .0108 (Standards of Construction for Wells Other than Water Supply), and any other jurisdictional laws and regulations pertaining to well construction.
4. Effluent limitations shall not exceed those specified in Attachment A.
5. Application rates, whether hydraulic, nutrient or other pollutant, shall not exceed those specified in Attachment B.
6. The irrigation system shall be connected to a rain or moisture sensor, which shall indicate when effluent application is not appropriate in accordance with Conditions III.4. and III.5. of this permit.
7. The compliance boundary for the disposal system shall be specified in accordance with 15A NCAC 02L .0107(b). This disposal system was individually permitted on or after December 30, 1983; therefore, the compliance boundary is established at either 250 feet from the effluent disposal area, or 50 feet within the property boundary, whichever is closest to the effluent disposal area. An exceedance of groundwater standards at or beyond the compliance boundary is subject to remediation action according to 15A NCAC 02L .0106(d)(2) as well as enforcement actions in accordance with North Carolina General Statute 143-215.6A through 143-215.6C.
8. In accordance with 15A NCAC 02L .0108, the review boundary is established midway between the compliance boundary and the effluent disposal area. Any exceedance of groundwater standards at the review boundary shall require action in accordance with 15A NCAC 02L .0106.
9. The Permittee shall apply for a permit modification to establish a new compliance boundary prior to any sale or transfer of property affecting a compliance boundary.

10. In accordance with 15A NCAC 02L .0107(d), no wells, excluding Division approved monitoring wells, shall be constructed within the compliance boundary except as provided for in 15A NCAC 02L .0107(g).
11. Except as provided for in 15A NCAC 02L .0107(g), the Permittee shall ensure any landowner who is not the Permittee and owns land within the compliance boundary shall execute and file with the Orange County Register of Deeds an easement running with the land containing the following items:
  - a. A notice of the permit and number or other description as allowed in 15A NCAC 02L .0107(f)(1);
  - b. Prohibits construction and operation of water supply wells within the compliance boundary; and
  - c. Reserves the right of the Permittee or the State to enter the property within the compliance boundary for purposes related to the permit.

The Director may terminate the easement when its purpose has been fulfilled or is no longer needed.

12. The facilities permitted herein shall be constructed according to the following setbacks:
  - a. The setbacks for irrigation sites permitted under 15A NCAC 02T .0500 shall be as follows (all distances in feet):
 

i. Any habitable residence or place of public assembly under separate ownership:	400
ii. Any habitable residence or place of public assembly owned by the Permittee:	200
iii. Any private or public water supply source:	100
iv. Surface waters:	100
v. Groundwater lowering ditches:	100
vi. Surface water diversions:	25
vii. Any well with exception of monitoring wells:	100
viii. Any property line:	150
ix. Top of slope of embankments or cuts of two feet or more in vertical height:	15
x. Any water line from a disposal system:	10
xi. Subsurface groundwater lowering drainage systems:	100
xii. Any swimming pool:	100
xiii. Public right of way:	50
xiv. Nitrification field:	20
xv. Any building foundation or basement:	15
  - b. The setbacks for storage and treatment units permitted under 15A NCAC 02T .0500 shall be as follows (all distances in feet):
 

i. Any habitable residence or place of public assembly under separate ownership:	100
ii. Any private or public water supply source:	100
iii. Surface waters:	50
iv. Any well with exception of monitoring wells:	100
v. Any property line:	50



### **III. OPERATION AND MAINTENANCE REQUIREMENTS**

1. The facilities shall be properly maintained and operated at all times. The facilities shall be effectively maintained and operated as a non-discharge system to prevent the discharge of any wastewater resulting from the operation of this facility. The Permittee shall maintain an Operation and Maintenance Plan pursuant to 15A NCAC 02T .0507, which at a minimum shall include operational functions, maintenance schedules, safety measures and a spill response plan.
2. Upon the Water Pollution Control System Operators Certification Commission's (WPCSOCC) classification of the subject non-discharge facilities, in accordance with 15A NCAC 08G .0200 the Permittee shall designate and employ a certified operator in responsible charge (ORC) and one or more certified operator(s) as back-up ORC(s). The ORC or their back-up shall visit the facilities in accordance with 15A NCAC 08G .0200, and shall comply with all other conditions specified in the previously cited rules.
3. A suitable year round vegetative cover shall be maintained at all times, such that crop health is optimized, allows for even distribution of effluent and allows inspection of the irrigation system.
4. Adequate measures shall be taken to prevent effluent ponding in or runoff from the irrigation sites listed in Attachment B.
5. Irrigation shall not be performed during inclement weather or when the ground is in a condition that will cause ponding or runoff.
6. All irrigation equipment shall be tested and calibrated at least once per permit cycle. Calibration records shall be maintained at the facility for a period of no less than five years, and shall be made available to the Division upon request.
7. Only effluent from the UNC-CH Bingham Facility shall be irrigated on the sites listed in Attachment B.
8. No automobiles or machinery shall be allowed on the irrigation sites except during equipment installation or while maintenance is being performed.
9. Public access to the irrigation sites and wastewater treatment facilities shall be prohibited.
10. The residuals generated from the wastewater treatment facilities shall be disposed or utilized in accordance with 15A NCAC 02T .1100. The Permittee shall maintain a residual management plan pursuant to 15A NCAC 02T .0508.
11. Diversion or bypassing of untreated or partially treated wastewater from the treatment facilities is prohibited.
12. Freeboard in the wet weather storage and secondary effluent storage basins shall not be less than two feet at any time.
13. Gauges to monitor waste levels in the wet weather storage and secondary effluent storage basins shall be provided. These gauges shall have readily visible permanent markings, at inch or tenth of a foot increments, indicating the following elevations: maximum liquid level at the top of the temporary liquid storage volume; minimum liquid level at the bottom of the temporary liquid storage volume; and the lowest point on top of the dam.
14. A protective vegetative cover shall be established and maintained on all earthen embankments (i.e., outside toe of embankment to maximum allowable temporary storage elevation on the inside of the embankment), berms, pipe runs, erosion control areas, and surface water diversions. Trees, shrubs, and other woody vegetation shall not be allowed to grow on the earthen dikes or embankments. Earthen embankment areas shall be kept mowed or otherwise controlled and accessible.

#### **IV. MONITORING AND REPORTING REQUIREMENTS**

1. Any Division required monitoring (including groundwater, plant tissue, soil and surface water analyses) necessary to ensure groundwater and surface water protection shall be established, and an acceptable sampling reporting schedule shall be followed.
2. Per 15A NCAC 02H .0800, a Division certified laboratory shall conduct all laboratory analyses for the required effluent, groundwater or surface water parameters.
3. Flow through the treatment facility shall be continuously monitored, and daily average flow values shall be reported on Form NDMR. Flow may be estimated from water use records, provided the Permittee's water use is metered. Daily average flow values shall be calculated by dividing the monthly metered water usage by the number of days in the month.
4. The Permittee shall monitor the effluent from the subject facilities at the frequencies and locations for the parameters specified in Attachment A.
5. The Permittee shall monitor surface water quality at monitoring stations SW-1, SW-2, SW-3 and SW-4 at the frequencies and for the parameters specified in Attachment A. The location of the four surface water monitoring stations is provided in Figure 1.
6. The Permittee shall maintain adequate records tracking the amount of effluent irrigated. At a minimum, these records shall include the following information for each irrigation site listed in Attachment B:
  - a. Date of irrigation;
  - b. Volume of effluent irrigated;
  - c. Site irrigated;
  - d. Length of time site is irrigated;
  - e. Continuous weekly, monthly, and year-to-date hydraulic (inches/acre) loadings;
  - f. Continuous monthly and year-to-date loadings for any non-hydraulic parameter specifically limited in Attachment B;
  - g. Weather conditions; and
  - h. Maintenance of cover crops.
7. Freeboard (i.e., waste level to the lowest embankment elevation) in the wet weather storage and secondary effluent storage basins shall be measured to the nearest inch or tenth of a foot, and recorded weekly. Weekly freeboard records shall be maintained at the facility for a period of no less than five years, and shall be made available to the Division upon request.
8. Three copies of all monitoring data (as specified in Conditions IV.3., IV.4. and IV.5.) on Form NDMR for each PPI and three copies of all operation and disposal records (as specified in Conditions IV.6. and IV.7.) on Form NDAR-1 for every site in Attachment B shall be submitted on or before the last day of the following month. If no activities occurred during the monitoring month, monitoring reports are still required documenting the absence of the activity. All information shall be submitted to the following address:

Division of Water Quality  
Information Processing Unit  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

9. A record shall be maintained of all residuals removed from this facility. This record shall be maintained at the facility for a period of no less than five years, and shall be made available to the Division upon request. At a minimum, this record shall include:
  - a. Name of the residuals hauler;
  - b. Non-Discharge permit number authorizing the residuals disposal, or a letter from a municipality agreeing to accept the residuals;
  - c. Date the residuals were hauled; and
  - d. Volume of residuals removed.
  
10. A maintenance log shall be maintained at this facility. This log shall be maintained at the facility for a period of no less than five years, and shall be made available to the Division upon request. At a minimum, this log shall include:
  - a. Visual observations of the plant and plant site; and
  - b. Record of preventative maintenance (e.g., changing of equipment, adjustments, testing, inspections and cleanings, etc.).
  
11. Monitoring wells MW-3, MW-4, MW-5 and MW-6 shall be sampled after construction and within 3 months prior to initiating non-discharge disposal operations. Monitoring wells MW-1, MW-3, MW-4, MW-5 and MW-6 shall be sampled thereafter at the frequencies and for the parameters specified in Attachment C. Prior to their temporary abandonment, monitoring well MW-2 shall be sampled at the frequencies and for the parameters specified in Attachment C. All mapping, well construction forms, well abandonment forms and monitoring data shall refer to the permit number and the well nomenclature as provided in Attachment C and Figure 1.
  
12. For initial sampling of monitoring wells MW-3, MW-4, MW-5 and MW-6, the Permittee shall submit a Compliance Monitoring Form (GW-59) and a Well Construction Record Form (GW-1) listing this permit number and the appropriate monitoring well identification number. Initial Compliance Monitoring Forms (GW-59) without copies of the Well Construction Record Forms (GW-1) are deemed incomplete, and may be returned to the Permittee without being processed.
  
13. Two copies of the monitoring well sampling and analysis results shall be submitted on a Compliance Monitoring Form (GW-59), along with attached copies of laboratory analyses, on or before the last working day of the month following the sampling month. The Compliance Monitoring Form (GW-59) shall include this permit number, the appropriate well identification number, and one GW-59a certification form shall be submitted with each set of sampling results. All information shall be submitted to the following address:
 

Division of Water Quality  
 Information Processing Unit  
 1617 Mail Service Center  
 Raleigh, North Carolina 27699-1617
  
14. An annual representative soils analysis (i.e., Standard Soil Fertility Analysis) shall be conducted on each irrigation site listed in Attachment B. These results shall be maintained at the facility for a period of no less than five years, and shall be made available to the Division upon request. At a minimum, the Standard Soil Fertility Analysis shall include the following parameters:

Acidity	Exchangeable Sodium Percentage	Phosphorus
Base Saturation (by calculation)	Magnesium	Potassium
Calcium	Manganese	Sodium
Cation Exchange Capacity	Percent Humic Matter	Zinc
Copper	pH	

15. The Permittee shall provide to the Division an annual report summarizing the performance of the wastewater treatment and irrigation facility, and the extent to which the facility has violated its permit, or federal or State laws, regulations, or rules related to the protection of water quality. This report shall be prepared on a calendar year basis and shall be provided no later than March 1<sup>st</sup> of the following calendar year. Two electronic copies of the annual report shall be submitted to the Division and at a minimum shall include:
  - a. A record of all limit exceedances for the parameters listed in Attachments A, B and C, as well as a description of corrective actions taken to remedy the limit violations.
  - b. Date(s) of testing and calibration as required in Condition III.6.
  - c. Records of all residuals removed from the facility in accordance with Condition IV.9.
  - d. Copies of the annual representative soil analysis conducted on each irrigation field as required in Condition IV.14.
  - e. Priority Pollutant Analysis on a representative sample of the facility's generated wastewater.
16. Pursuant to §143-215.1C (b), the Permittee shall provide public notification upon discharge of untreated or partially treated wastewater to surface waters of the State. For discharges of 1,000 gallons or more, the Permittee shall issue a press release describing the details of the discharge. This press release shall be made through the print/electronic news media provider that has the largest circulation coverage in Orange County. The Permittee shall issue the press release within 48 hours after determining that the discharge has reached surface waters. The Permittee shall retain a copy of the press release and a list of the news media to which it was distributed for at least one year after the discharge and include this information in the Annual Report noted in Condition IV.15. above.

**17. Noncompliance Notification:**

The Permittee shall report by telephone to the Raleigh Regional Office, telephone number (919) 791-4200, as soon as possible, but in no case more than 24 hours, or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

- a. Any occurrence at the facility resulting in the treatment of significant amounts of wastes that is abnormal in quantity or characteristic, including the known passage of a hazardous substance.
- b. Any process unit failure (e.g., mechanical, electrical, etc.), due to known or unknown reasons, rendering the facility incapable of adequate wastewater treatment.
- c. Any facility failure resulting in a by-pass directly to receiving surface waters.
- d. Any time self-monitoring indicates the facility has gone out of compliance with its permit limitations.
- e. Ponding in or runoff from the irrigation sites.

Any emergency requiring immediate reporting (e.g., discharges to surface waters, imminent failure of a storage structure, etc.) outside normal business hours shall be reported to the Division's Emergency Response personnel at telephone number (800) 662-7956, (800) 858-0368, or (919) 733-3300. Persons reporting such occurrences by telephone shall also file a written report in letter form within five days following first knowledge of the occurrence. This report shall outline the actions taken or proposed to be taken to ensure the problem does not recur.

**V. INSPECTIONS**

1. The Permittee shall provide adequate inspection and maintenance to ensure proper operation of the wastewater treatment and irrigation facilities.
2. The Permittee or their designee shall inspect the wastewater treatment and irrigation facilities to prevent malfunctions, facility deterioration and operator errors resulting in discharges, which may cause the release of wastes to the environment, a threat to human health or a public nuisance. The Permittee shall maintain an inspection log that includes, at a minimum, the date and time of inspection, observations made, and any maintenance, repairs, or corrective actions taken. The Permittee shall maintain this inspection log for a period of five years from the date of the inspection, and this log shall be made available to the Division upon request.
3. Any duly authorized Division representative may, upon presentation of credentials, enter and inspect any property, premises or place on or related to the wastewater treatment and irrigation facilities permitted herein at any reasonable time for the purpose of determining compliance with this permit; may inspect or copy any records required to be maintained under the terms and conditions of this permit, and may collect groundwater, surface water or leachate samples.

**VI. GENERAL CONDITIONS**

1. Failure to comply with the conditions and limitations contained herein may subject the Permittee to an enforcement action by the Division in accordance with North Carolina General Statutes 143-215.6A to 143-215.6C.
2. This permit shall become voidable if the permitted facilities are not constructed in accordance with the conditions of this permit, the Division approved plans and specifications, and other supporting documentation.
3. This permit is effective only with respect to the nature and volume of wastes described in the permit application, Division approved plans and specifications, and other supporting documentation. No variances to applicable rules governing the construction or operation of the permitted facilities are granted, unless specifically requested and approved in this permit pursuant to 15A NCAC 02T .0105(n).
4. The issuance of this permit does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances, which may be imposed by other jurisdictional government agencies (e.g., local, state, and federal). Of particular concern to the Division are applicable river buffer rules in 15A NCAC 02B .0200; erosion and sedimentation control requirements in 15A NCAC Chapter 4 and under the Division's General Permit NCG010000; any requirements pertaining to wetlands under 15A NCAC 02B .0200 and 02H .0500; and documentation of compliance with Article 21 Part 6 of Chapter 143 of the General Statutes.
5. In the event the permitted facilities change ownership or the Permittee changes their name, a formal permit modification request shall be submitted to the Division. This request shall be made on official Division forms, and shall include appropriate property ownership documentation and other supporting documentation as necessary. The Permittee of record shall remain fully responsible for maintaining and operating the facilities permitted herein until a permit is issued to the new owner.
6. The Permittee shall retain a set of Division approved plans and specifications for the life of the facilities permitted herein.
7. The Permittee shall maintain this permit until all permitted facilities herein are properly closed or permitted under another permit issued by the appropriate permitting authority pursuant to 15A NCAC 02T .0105(j).

8. This permit is subject to revocation or unilateral modification upon 60 days notice from the Division Director, in whole or part for the requirements listed in 15A NCAC 02T .0110.
9. Unless the Division Director grants a variance, expansion of the permitted facilities contained herein shall not be granted if the Permittee exemplifies any of the criteria in 15A NCAC 02T .0120(b).
10. The Permittee shall pay the annual fee within 30 days after being billed by the Division. Failure to pay the annual fee accordingly shall be cause for the Division to revoke this permit pursuant to 15A NCAC 02T .0105(e)(3).

Permit issued this the # day of MONTH YEAR

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

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Charles Wakild, Director  
Division of Water Quality  
By Authority of the Environmental Management Commission

**Permit Number WQ0023896**

**ENGINEERING CERTIFICATION**

Partial     Final

In accordance with 15A NCAC 02T .0116, I, \_\_\_\_\_,  
 as a duly registered Professional Engineer in the State of North Carolina, having the Permittee's  
 authorization to  periodically  weekly  fully observe the construction of the permitted facility,  
 hereby state to the best of my abilities that due care and diligence was used in the observation of the  
 construction, such that the facility was built within substantial compliance and intent of this permit, the  
 Division approved plans and specifications, and other supporting documentation.

Any variation to this permit, the Division approved plans and specifications, and other supporting  
 documentation has been documented in the attached as-built drawings, and shall serve as the  
 Permittee's minor modification request to amend the permit accordingly.

Provide a brief narrative description of any variations: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Professional Engineer's Name		
Engineering Firm		
Mailing Address		
City	State	Zip
Telephone	E-mail	
NC PE Seal, Signature & Date		

**THE COMPLETED ENGINEERING CERTIFICATION, INCLUDING ALL SUPPORTING  
 INFORMATION AND MATERIALS, SHALL BE SENT TO THE FOLLOWING ADDRESS:  
 NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
 DIVISION OF WATER QUALITY  
 AQUIFER PROTECTION SECTION  
 LAND APPLICATION UNIT**

By U.S. Postal Service:  
 1636 MAIL SERVICE CENTER  
 RALEIGH, NORTH CAROLINA 27699-1636

By Courier/Special Delivery:  
 512 N. SALISBURY ST.  
 RALEIGH, NORTH CAROLINA 27604

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PPI 002 – WWTP Effluent

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS						MONITORING REQUIREMENTS			
PCS Code	Parameter Description	Monthly Average		Monthly Geometric Mean		Daily Minimum		Daily Maximum		Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)	30	mg/L							4 x Year <sup>1</sup>	Grab
00940	Chloride (as Cl)		mg/L							4 x Year <sup>1</sup>	Grab
50060	Chlorine, Total Residual		mg/L							Weekly	Grab
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C			200	#/100 mL					4 x Year <sup>1,2</sup>	Grab
50050	Flow, in conduit or thru treatment plant	3,556	GPD							Monthly	Estimate
00610	Nitrogen, Ammonia Total (as N)	15	mg/L							4 x Year <sup>1</sup>	Grab
00625	Nitrogen, Kjeldahl, Total (as N)		mg/L							4 x Year <sup>1</sup>	Grab
00620	Nitrogen, Nitrate Total (as N)		mg/L							4 x Year <sup>1</sup>	Grab
00400	pH					su		su		Weekly	Grab
00665	Phosphorus, Total (as P)		mg/L							4 x Year <sup>1</sup>	Grab
70300	Solids, Total Dissolved – 180 °C		mg/L							4 x Year <sup>1</sup>	Grab
00530	Solids, Total Suspended	30	mg/L							4 x Year <sup>1</sup>	Grab

1. 4 x Year sampling shall be conducted in March, June, September and December.
2. Fecal Coliform sampling shall be a geometric mean.

**PPI 003 – Surface Water Monitoring Station SW-1**

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS						MONITORING REQUIREMENTS			
PCS Code	Parameter Description	Monthly Average		Monthly Geometric Mean		Daily Minimum		Daily Maximum		Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)		mg/L							2 x Year <sup>1</sup>	Grab
00300	DO, Oxygen, Dissolved		mg/L							2 x Year <sup>1</sup>	Grab
00600	Nitrogen, Total (as N)		mg/L							2 x Year <sup>1</sup>	Grab
00400	pH						su		su	2 x Year <sup>1</sup>	Grab
00665	Phosphorus, Total (as P)		mg/L							2 x Year <sup>1</sup>	Grab

1. 2 x Year sampling shall occur during January and July.

**PPI 004 – Surface Water Monitoring Station SW-2**

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS						MONITORING REQUIREMENTS			
PCS Code	Parameter Description	Monthly Average		Monthly Geometric Mean		Daily Minimum		Daily Maximum		Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)		mg/L							2 x Year <sup>1</sup>	Grab
00300	DO, Oxygen, Dissolved		mg/L							2 x Year <sup>1</sup>	Grab
00600	Nitrogen, Total (as N)		mg/L							2 x Year <sup>1</sup>	Grab
00400	pH						su		su	2 x Year <sup>1</sup>	Grab
00665	Phosphorus, Total (as P)		mg/L							2 x Year <sup>1</sup>	Grab

1. 2 x Year sampling shall occur during January and July.

**PPI 005 – Surface Water Monitoring Station SW-3**

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS						MONITORING REQUIREMENTS		
PCS Code	Parameter Description	Monthly Average		Monthly Geometric Mean	Daily Minimum		Daily Maximum		Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)		mg/L						2 x Year <sup>1</sup>	Grab
00300	DO, Oxygen, Dissolved		mg/L						2 x Year <sup>1</sup>	Grab
00600	Nitrogen, Total (as N)		mg/L						2 x Year <sup>1</sup>	Grab
00400	pH					su		su	2 x Year <sup>1</sup>	Grab
00665	Phosphorus, Total (as P)		mg/L						2 x Year <sup>1</sup>	Grab

1. 2 x Year sampling shall occur during January and July.

**PPI 006 – Surface Water Monitoring Station SW-4**

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS						MONITORING REQUIREMENTS		
PCS Code	Parameter Description	Monthly Average		Monthly Geometric Mean	Daily Minimum		Daily Maximum		Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)		mg/L						2 x Year <sup>1</sup>	Grab
00300	DO, Oxygen, Dissolved		mg/L						2 x Year <sup>1</sup>	Grab
00600	Nitrogen, Total (as N)		mg/L						2 x Year <sup>1</sup>	Grab
00400	pH					su		su	2 x Year <sup>1</sup>	Grab
00665	Phosphorus, Total (as P)		mg/L						2 x Year <sup>1</sup>	Grab

1. 2 x Year sampling shall occur during January and July.

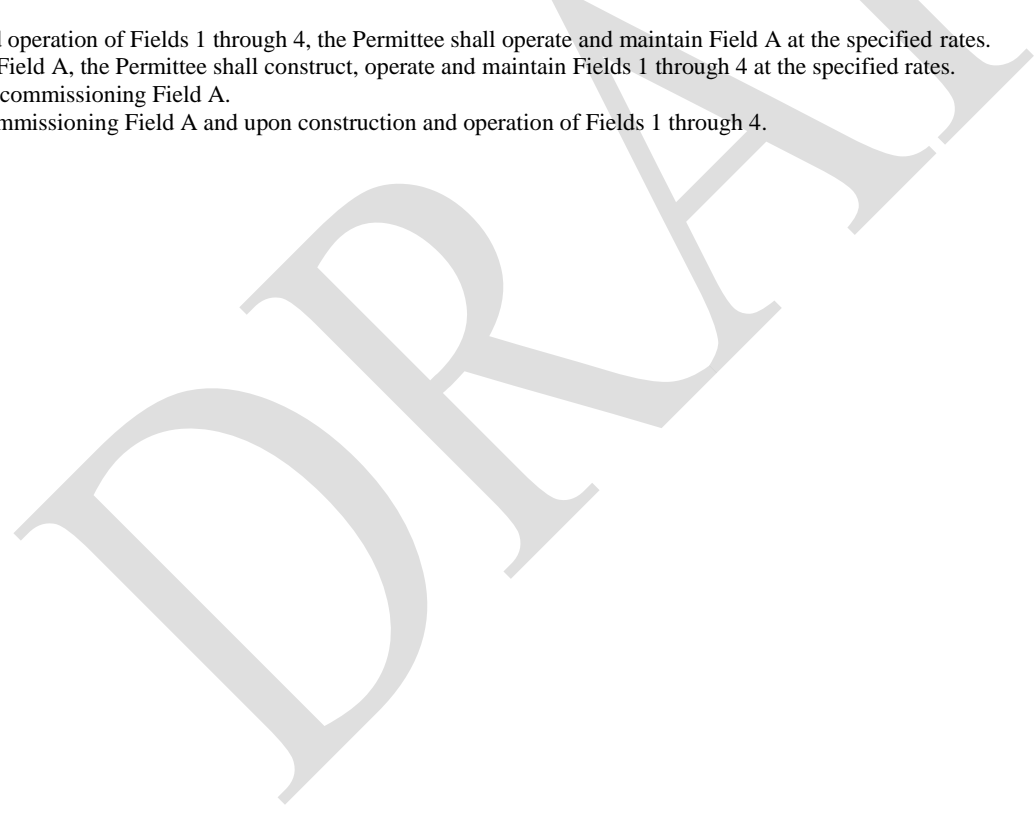
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The University of North Carolina at Chapel Hill – UNC-CH Bingham Facility

IRRIGATION AREA INFORMATION							APPLICATION LIMITATIONS			
Field	Owner	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Parameter	Hourly Rate	Yearly Max	Units
A <sup>1</sup>	The University of North Carolina at Chapel Hill	Orange	35.904525°	-79.241811°	2.12	Georgeville	01284 – Non-Discharge Application Rate	0.75	24.09	inches
1 <sup>2</sup>	The University of North Carolina at Chapel Hill	Orange	35.904525°	-79.241811°	1.53	Georgeville / Herndon	01284 – Non-Discharge Application Rate	0.22	10.92	inches
2 <sup>2</sup>	The University of North Carolina at Chapel Hill	Orange	35.904294 °	-79.240597°	1.55	Georgeville / Herndon	01284 – Non-Discharge Application Rate	0.22	10.92	inches
3 <sup>2</sup>	The University of North Carolina at Chapel Hill	Orange	35.903842°	-79.240775°	1.55	Georgeville / Herndon	01284 – Non-Discharge Application Rate	0.22	10.92	inches
4 <sup>2</sup>	The University of North Carolina at Chapel Hill	Orange	35.903342°	-79.241308°	1.09	Georgeville / Herndon	01284 – Non-Discharge Application Rate	0.22	10.92	inches
<b>Totals</b>					<b>2.12<sup>3</sup> / 5.72<sup>4</sup></b>					

1. Prior to construction and operation of Fields 1 through 4, the Permittee shall operate and maintain Field A at the specified rates.
2. After decommissioning Field A, the Permittee shall construct, operate and maintain Fields 1 through 4 at the specified rates.
3. Total acreage prior to decommissioning Field A.
4. Total acreage after decommissioning Field A and upon construction and operation of Fields 1 through 4.



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Monitoring wells: MW-1, MW-2, MW-3, MW-4, MW-5 and MW-6

GROUNDWATER CHARACTERISTICS		GROUNDWATER STANDARDS		MONITORING REQUIREMENTS		
PCS Code	Parameter Description	Daily Maximum		Frequency Measurement	Sample Type	Footnotes
00680	Carbon, Total Organic (TOC)		mg/L	4 x Year	Grab	1, 6
00940	Chloride (as Cl)	250	mg/L	4 x Year	Grab	1
31616	Coliform, Fecal MF		#/100mL	4 x Year	Grab	1
00610	Nitrogen, Ammonia Total (as N)	1.5	mg/L	4 x Year	Grab	1
00620	Nitrogen, Nitrate Total (as N)	10	mg/L	4 x Year	Grab	1
00400	pH	6.5-8.5	su	4 x Year	Grab	1, 2
00665	Phosphorus, Total (as P)		mg/L	4 x Year	Grab	1
70300	Solids, Total Dissolved – 180 °C	500	mg/L	4 x Year	Grab	1
NDVOC	Volatile Organic Compounds		Presence: Yes/No	Annually	Grab	1, 4, 5
82546	Water level, distance from measuring point		ft	4 x Year	Calculated	1, 2, 3

- 4 x Year monitoring shall be conducted in March, June, September & December; Annual monitoring shall be conducted every December.
- The measurement of water levels shall be made prior to purging the wells. The depth to water in each well shall be measured from the surveyed point on the top of the casing. The measurement of pH shall be made after purging and prior to sampling for the remaining parameters.
- The measuring points (top of well casing) of all monitoring wells shall be surveyed to provide the relative elevation of the measuring point for each monitoring well. The measuring points (top of casing) of all monitoring wells shall be surveyed relative to a common datum.
- Volatile Organic Compounds (VOC) - In December only, analyze by one of the following methods:
  - Standard Method 6230D, PQL at 0.5 µg/L or less
  - Standard Method 6210D, PQL at 0.5 µg/L or less
  - EPA Method 8021, Low Concentration, PQL at 0.5 µg/L or less
  - EPA Method 8260, Low Concentration, PQL at 0.5 µg/L or less
  - Another method with prior approval by the Aquifer Protection Section Chief

Any method used must meet the following qualifications:

  - A laboratory must be DWQ certified to run any method used.
  - The method used must, at a minimum, include all the constituents listed in Table VIII of Standard Method 6230D.
  - The method used must provide a PQL of 0.5 µg/L or less that must be supported by laboratory proficiency studies as required by the DWQ Laboratory Certification Unit. Any constituents detected above the MDL but below the PQL of 0.5 µg/L must be qualified (estimated) and reported.
- If any volatile organic compounds (VOC) are detected as a result of monitoring as provided in Attachment C, then the Raleigh Regional Office Aquifer Protection Supervisor, telephone number (919) 791-4200, must be contacted immediately for further instructions regarding any additional follow-up analyses required.
- If TOC concentrations greater than 10 mg/L are detected in any downgradient monitoring well, additional sampling and analysis must be conducted to identify the individual constituents comprising this TOC concentration. If the TOC concentration as measured in the background monitor well exceeds 10 mg/L, this concentration will be taken to represent the naturally occurring TOC concentration. Any exceedances of this naturally occurring TOC concentration in the downgradient wells shall be subject to the additional sampling and analysis as described above.
- Monitoring wells shall be reported consistent with the nomenclature and location information provided in Figure 1 and this attachment.