



State of Ohio Environmental Protection Agency

STREET ADDRESS:

MAILING ADDRESS:

TELE: (614) 644-3020 FAX: (614) 644-2329

January 12, 2001

Re: Madison County  
Jefferson Township  
Application No. 01-9504  
Application for Ultraviolet Disinfection for  
Battelle North and Middle Wastewater Treatment  
Plants  
Plans Received August 7, 2000  
From Burgess & Niple, Limited

CERTIFIED MAIL

Battelle  
Attn: Frank Hood  
505 King Avenue  
Columbus, Ohio 43201-2693

Ladies and Gentlemen:

Enclosed is the Ohio EPA Permit to Install which will allow you to install the described source in the manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The issuance of this Permit to Install is considered to be a final action of the director. Any person who was a party to this proceeding may appeal this action to the Environmental Review Appeals Commission pursuant to Ohio Revised Code 3745.04. To appeal this action, a written notice of appeal, setting forth the action complained of and the grounds for appeal, must be filed with the Environmental Review Appeals Commission at 236 East Town Street, Room 300, Columbus, Ohio 43266-0557, within thirty (30) days after the date of this letter. You must also serve a copy of the notice of appeal to the director of Ohio EPA and the Environmental Enforcement Section of the Office of the Attorney General within three (3) days of filing a notice of appeal with the Environmental Review Appeals Commission.

You should note that a general condition of your permit states that issuance of the permit does not relieve you of the duty of complying with all applicable federal, state, and local laws, ordinances, and regulations.

If you have any questions, please contact the Ohio EPA district office to which you submitted your application.

Sincerely

Martha D. Spurbeck, Supervisor  
Permit Processing Unit  
Division of Surface Water

MDS/sg

Enclosure

cc: Central District Office  
Madison County Health Department  
Burgess & Niple, Limited

Bob Taft, Governor  
Maureen O'Connor, Lieutenant Governor  
Christopher Jones, Director

# Ohio Environmental Protection Agency

## Permit to Install

Application No 01-9504

Applicant's Name: Battelle

Address: 505 King Avenue

City: Columbus

State: Ohio 43201-2693

Person to Contact: Frank Hood

Telephone: (614) 424-4181

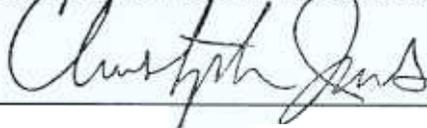
Description of Proposed Source: Ultraviolet Disinfection for Battelle North and Middle Wastewater Treatment Plants, Jefferson Township, Madison County

Issuance Date: January 12, 2001

Effective Date: January 12, 2001

The above named entity is hereby granted a permit to install for the above described source pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described source of environmental pollutants will operate in compliance with applicable state and federal laws and regulations. Issuance of this permit does not constitute expressed or implied assurance that, if constructed or modified in accordance with those plans and specifications, the above described source of pollutants will be granted the necessary operating permits. This permit is granted subject to the following conditions attached hereto.

Ohio Environmental Protection Agency



Christopher Jones  
Director

P. O. Box 1049, 122 South Front Street  
Columbus, OH 43216-1049

This permit shall expire if construction has not been initiated by the applicant within eighteen months of the effective date of this permit. By accepting this permit, the applicant acknowledges that this eighteen month period shall not be considered or construed as extending or having any effect whatsoever on any compliance schedule or deadline set forth in any administrative or court order issued to or binding upon the permit applicant, and the applicant shall abide by such compliance schedules or deadlines to avoid the initiation of additional legal action by the Ohio EPA.

The director of the Ohio Environmental Protection Agency, or his authorized representatives, may enter upon the premises of the above named applicant during construction and operation at any reasonable time for the purpose of making inspections, conducting tests, examining records, or reports pertaining to the construction, modification, or installation of the above described source of environmental pollutants.

Issuance of this permit does not relieve you of the duty of complying with all applicable federal, state, and local laws, ordinances, and regulations.

Any well, well point, pit, or other device installed for the purpose of lowering the ground water level to facilitate construction of this project shall be properly abandoned in accordance with the provisions of this plan or as directed by the director or his representative.

Any person installing any well, well point, pit or other device used for the purpose of removing ground water from an aquifer shall complete and file a Well Log and Drilling Report form with the Ohio Department of Natural Resources, Division of Water, within 30 days of the well completion in accordance with the Ohio Revised code Section 1521.01 and 1521.05. In addition, any such facility that has a capacity to withdraw waters of the state in an amount greater than 100,000 gallons per day from all sources shall be registered by the owner with the chief of the Division of Water, Ohio Department of Natural Resources, within three months after the facility is completed in accordance with Section 1521.16 of the Ohio Revised Code. For copies of the necessary well log, drilling report, or registration forms, please contact:

Ohio Department of Natural Resources  
Fountain Square  
Columbus, OH 43224-1387  
(614) 265-6717

The proposed wastewater disposal system shall be constructed in strict accordance with the plans and application approved by the director of the Ohio Environmental Protection Agency. There shall be no deviation from these plans without the prior express, written approval of the agency. Any deviations from these plans or the above conditions may lead to such sanctions and penalties as provided for under Ohio law. Approval of this plan and issuance of this permit does not constitute an assurance by the Ohio Environmental Protection Agency that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

This permit to install applies only to the wastewater treatment works listed above. The installation of drinking water supplies, air contaminant sources, or solid waste disposal facilities will require the submittal of a separate application to the director.

This permit applies to a wastewater disposal system designed to serve an average daily hydraulic flow of no more than 20,000 gallons.

Roof drains, foundation drains, and other clean water connections to the disposal system are prohibited.

The treatment works shall be abandoned and the sanitary sewers connected to the public sanitary sewerage system whenever such system becomes available.

The sanitary control of the area shall be maintained within a 100 foot radius of each water supply well.

The applicant shall notify the Ohio Environmental Protection Agency if he does not continue as the sole user of the sewage disposal system.

The owner, Battelle, shall be responsible for proper operation and maintenance of the wastewater disposal system.

The operation of the wastewater disposal system shall be under the responsible charge of a certified operator having the proper certificate issued under Chapter 3745-7-05 of the Ohio Administrative Code.

**Special Conditions:**

1. **Sediment Controls:** Storage areas for excavated material shall be surrounded by silt fences. Stabilized working pads shall be provided for the equipment in association with the construction of the crossing. Additional sediment control devices (i.e. silt fence, sediment traps) shall be used when the trench affectment falls within 100 feet of the stream.
2. **Trench and Groundwater Dewatering:** All trench dewatering shall be directed through a sediment impoundment structure. Adequate outlet protection must be provided for each impoundment. If any groundwater dewatering should occur, the contractor shall contact the Ohio Department of Natural Resources, Division of Water, to assure proper well installation and abandonment of wells. The contractor shall not direct the groundwater to the impoundment intended for trench water.
3. **U.S. Army Corps of Engineers:** The applicant shall contact the appropriate district of the U.S. Army Corps of Engineers for a determination regarding potential impacts to waters of the state as well as the requirements for obtaining, if necessary, a Clean Water Act Section 404 permit and 401 Water Quality Certification. The applicant shall acquire a Section 404 permit and 401 certification if needed, before impacting any waters of the State as part of this project.

**REPORT ON THE PERMIT TO INSTALL APPLICATION FOR THE  
BATTELLE NORTH AND MIDDLE WASTEWATER TREATMENT PLANT UPGRADE  
JEFFERSON TOWNSHIP, MADISON COUNTY, OHIO  
OHIO EPA PERMIT-TO-INSTALL NO.: 01-9504**

On August 7, 2000, the Ohio EPA Central District Office received a complete Permit to Install (PTI) application, detailed plans, and associated information for the proposed plant upgrades to the Battelle North and Middle wastewater treatment plants. The application and plans were received from Mr. Jim Ward, P.E. of Burgess & Niple on the behalf of Battelle.

**Background:** Battelle is located off Township Route 142, between Interstate 70 and State Route 40, Jefferson Township, Madison County, Ohio. Battelle operates three plants at this facility, the North, Middle and South wastewater treatment plants (wwtps). Currently, Battelle utilizes chlorine for disinfection at each of these wwtps. The wwtps discharge to the Big Darby Creek, approximately one mile north of State Route 40.

**WWTP Design Overview:** The proposed ultraviolet (UV) disinfection system for this application will replace the chlorine disinfection systems for the North and Middle wwtps. A separate permit to install application has been submitted for the UV disinfection system for the South wwtp. The North wwtp has the capacity of 2,400 gallons per day (gpd) and the Middle wwtp has the capacity of 20,000 gpd.

**Disinfection - North WWTP:** Disinfection (destruction of pathogens) will be performed with an ultraviolet light source. The UV disinfection system will treat the clarified wastewater by exposing the pathogens and bacteria to ultraviolet light. This will be done by passing the effluent through a bank of ultraviolet light tubes.

The detailed plans indicates that a UV light bank will have horizontal alignment. The single UV lamp module will be contained in an inner channel in a proposed contact tank. The lamp module will hold two UV lamps. The lamps will be arranged in a uniform staggered array which will be parallel to each other and to the flow of the wastewater. This module of UV lamps will be housed in a channel equipped with an outlet level control weir. The level control weir will be used to maintain a constant water level over the tubes to keep them adequately submerged. This system has been designed to be operated without a housing.

Each UV lamp will be expected to provide at least 90% of the ultraviolet output within the wavelengths of 233.7 to 273.7 nm, with a level of output of 65% after one year. Each UV lamp will be protected from the effluent by being enclosed in a quartz sleeve. This sleeve will be composed of fused quartz circular tubing with a minimum of 89% transmission at a wavelength 253 nanometers of UV radiation. The nominal average intensity of the system will be not less than 29,000  $\mu\text{watts secs/cm}^2$  after one (1) year of operation. The design and size of the proposed disinfection system are satisfactory.

The existing chlorination disinfection system will be demolished.

**Disinfection - Middle WWTP:** Disinfection (destruction of pathogens) will be performed with an ultraviolet light source. The UV disinfection system will treat the clarified wastewater by exposing the pathogens and bacteria to ultraviolet light. This will be done by passing the effluent through a bank of ultraviolet light tubes.

The detailed plans indicates that a UV light bank will have horizontal alignment. The three UV lamp

modules will be contained in an inner channel in a proposed contact tank. The lamp modules will hold two UV lamps. The lamps will be arranged in a uniform staggered array which will be parallel to each other and to the flow of the wastewater. This module of UV lamps will be housed in a channel equipped with an outlet level control weir. The level control weir will be used to maintain a constant water level over the tubes to keep them adequately submerged. This system has been designed to be operated without a housing.

Each UV lamp will be expected to provide at least 90% of the ultraviolet output within the wavelengths of 233.7 to 273.7 nm , with a level of output of 65% after one year. Each UV lamp will be protected from the effluent by being enclosed in a quartz sleeve. This sleeve will be composed of fused quartz circular tubing with a minimum of 89% transmission at a wavelength 253 nanometers of UV radiation. The nominal average intensity of the system will be not less that 29,000  $\mu$ watts secs/cm<sup>2</sup> after one (1) year of operation. The design and size of the proposed disinfection system are satisfactory.

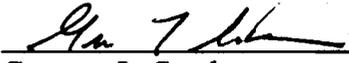
The existing chlorination disinfection system will be demolished.

**Estimated Project Cost:** \$50,500.00

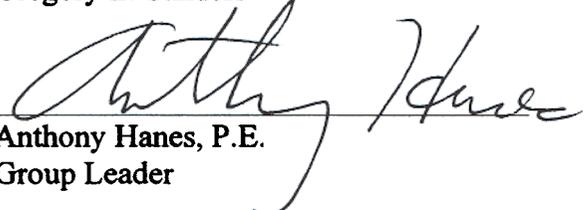
### CONCLUSIONS

The Permit To Install application and detailed plans for the proposed plant upgrades to Battelle's wastewater treatment plant appear to be satisfactory. It is recommended that the plans be approved subject to the usual conditions and the attached special conditions.

Report Prepared By:

  
Gregory L. Sanders

Report Reviewed By:

  
Anthony Hanes, P.E.  
Group Leader

## **SPECIAL CONDITIONS**

- 1**     **Sediment Controls:** Storage areas for excavated material shall be surrounded by silt fences. Stabilized working pads shall be provided for the equipment in association with the construction of the crossing. Additional sediment control devices (i.e. silt fence, sediment traps) shall be used when the trench affected area falls within 100 feet of the stream.
  
- 2.**     **Trench and Groundwater Dewatering:** All trench dewatering shall be directed through a sediment impoundment structure. Adequate outlet protection must be provided for each impoundment. If any groundwater dewatering should occur, the contractor shall contact the Ohio Department of Natural Resources, Division of Water, to assure proper well installation and abandonment of wells. The contractor shall not direct the groundwater to the impoundment intended for trench water.
  
- 3.**     **U.S. Army Corps of Engineers:** The applicant shall contact the appropriate district of the U.S. Army Corps of Engineers for a determination regarding potential impacts to waters of the state as well as the requirements for obtaining, if necessary, a Clean Water Act Section 404 permit and 401 Water Quality Certification. The applicant shall acquire a Section 404 permit and 401 certification if needed, before impacting any waters of the State as part of this project.