



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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VIA CERTIFIED MAIL P 652 575 694

February 15, 1990

Lawrence County Commissioners  
Courthouse  
Bedford, Indiana 47421

Re: Hydrogeologic Study  
Lawrence County Landfill  
Lawrence County

Dear Gentlemen:

Pursuant to 329 IAC 2-7-4(c), the schedule for compliance with the ground water monitoring requirements of 329 IAC 2-16 shall be established at the time of permit renewal for existing solid waste land disposal facilities. During the facility's current permit renewal review, geology staff of the Office of Solid and Hazardous Waste Management (OSHWM) has assessed the adequacy of the current monitoring well system. Review of the OSHWM file indicates that there is insufficient information on the monitoring well system to make an adequate assessment. A hydrogeologic study of the site has never been performed or provided to OSHWM. Since it is crucial that a reliable monitoring well system exist at this site to comply with the requirements of 329 IAC 2-16, a hydrogeologic study of the site is essential.

A hydrogeologic study is required for Lawrence County Landfill that must include the following information:

A proposal be submitted in consultation with the Geology Section of the OSHWM within 120 days for the installation of monitoring devices, upgradient and downgradient from the landfill with respect to the ground water flow direction. The ground water monitoring system shall consist of a sufficient number of monitoring devices, installed at appropriate locations and depths, to yield ground water samples from the aquifer or aquifers that represent the quality of both background water that has not been affected by leachate from the facility and the quality of ground water passing the monitoring boundary. The Commissioner may modify the requirements for the proposal dependent on site characteristics. The hydrogeologic study must provide the following information, with supporting data, by means of maps, diagrams, and narrative:

- a. Summary of regional and site specific geologic information obtained from recent or previous soil borings, coal borings, rock cores, area well logs, and/or published reports. The primary purpose of this investigation is to adequately and accurately characterize the geologic and hydrogeologic conditions existing at and in the vicinity

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of the site. An understanding of the geologic conditions is necessary to design an adequate ground water monitoring system at the facility.

- b. Identification of aquifers below the site to the depth of at least 70 feet below the depth of waste placement. In addition, a general identification and description shall be provided for aquifers known to exist from the geologic literature and/or area well logs.
- c. Aquifer thickness(es) and lithology.
- d. Whether aquifer(s) are confined or unconfined and a description of the units above and below.
- e. Water table and/or potentiometric surface map(s) of the area underlying the landfill on a scale of one inch equals 100 feet. The ground water flow directions shall be indicated on the map.
  1. Such maps shall be prepared from data from cased holes or piezometers capable of measuring hydraulic head at a maximum screened interval of five (5) feet. This limitation on the maximum length of the screened interval shall not apply to those piezometers used to determine a water table surface. At least three such devices shall be necessary for fill areas less than 20 acres, four such devices for fill areas between 20 and 50 acres, five for fill areas between 50 and 90 acres, and six such devices for fill areas greater than 90 acres. The required devices shall be evenly distributed around the site. Where more than one aquifer is present within 70 feet below the depth of waste placement individual water table and/or potentiometric maps may be required.
- f. Known or projected information on hydraulic connections of ground water to surface water and hydraulic connections between different aquifers at the site.
- g. The proposal shall discuss the evidence and/or potential of significant components of vertical ground water flow. If there are significant components of vertical flow, cross-sectional representations of equipotential lines and ground water flow direction shall be provided which adequately represent the flow beneath the site. The cross-section shall be of scale at one inch equals 100 feet horizontally and one inch equals 10 feet vertically.
  1. Vertical hydraulic gradients shall be measured at a minimum of two separate points at the site. Additional nested piezometers or wells may be required by the Commissioner to adequately determine vertical components.

- h. Estimated aquifer characteristics (hydraulic conductivity and effective porosity). The Commissioner may require that pumping tests or similar hydraulic tests be performed to provide a more accurate determination of aquifer characteristics where necessary to determine the adequacy of site or monitoring system design.
- i. Information on the current and proposed use of ground water in the area, including any available information on existing quality of ground water in aquifer(s).
  - 1. Drilling logs and a topographic map indicating the location, and identification of, with respect to the drilling logs, all wells within 2 miles of the proposed facility which are on file with the Indiana Department of Natural Resources. Where a large number of well logs would be required by this requirement, the Commissioner may alternatively allow a summary of information to be submitted.
  - 2. A survey of any residences within one quarter mile of the solid waste boundary shall be conducted. The survey is to determine whether wells which do not have well logs on file with the Indiana Department of Natural Resources are present and any information regarding these wells. A statement and summary as to the results of the survey and any information gained shall be reported.
- j. Diagrammatic representation of proposed monitoring well design and construction, including information on materials, screen size (including length and proposed elevation of screened intervals), drilling techniques, and well development methods.
- k. Proposed well locations. The downgradient monitoring devices which constitute the monitoring boundary of the facility shall be located within 50 feet of the solid waste boundary, or property line, whichever is closer to the solid waste boundary, except where 50 feet is not possible because of site topography or geology. (The "monitoring boundary of the facility" is defined by the vertical plane provided by the monitoring devices hydraulically downgradient from the facility.)
  - l. Location of access roads for all monitoring wells.
- m. The hydrogeologic study and monitoring well proposal shall be certified by a registered professional engineer or certified professional geologist, either of whom shall have education or professional experience in hydrogeology or hydrology.

In addition there is some confusion on the actual elevations of the top of the casings of the monitoring wells now on the site. The site description map by Warren T. Hobson and Associates dated 11-28-88, revised 6-27-89, shows the following elevations:

Well number	Top of casing elevation
1	589.65
2	588.27
3	620.70
4	629.90

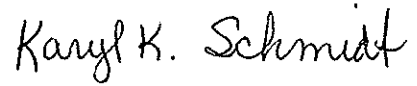
This seems to disagree with your letter of September 6, 1989, which gives the following information:

Well number	Height of casing
1	586.21
2	584.54
3	615.92
4	624.74

Is the second set of elevations the elevations of the ground surface at the casings, or is one set of elevations incorrect? Please submit this information within sixty (60) days of receipt of this letter.

If you have any questions on this matter, please contact Mr. George Cesnik at 317/232-8722.

Very truly yours,



Karyl K. Schmidt, C.P.G., Chief  
Geology Section  
Technical Support Branch  
Solid and Hazardous Waste Management

GC/ssh

cc: Lawrence County Department of Public Health  
    ↳ Mr. Tim Hotz  
    Mr. George Cesnik  
    File 2C1d