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NORTH DAKOTA UNDERGROUND INJECTION CONTROL PROGRAM DESCRIPTION

Submitted by

North Dakota State Department of Health
Division of Water Supply & Pollution Control

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NORTH DAKOTA UNDERGROUND INJECTION CONTROL PROGRAM DESCRIPTION

I. INTRODUCTION

As mandated by the Safe Drinking Water Act (SDWA), the United States Environmental Protection Agency (EPA) has promulgated regulations establishing minimum requirements, technical criteria and standards for underground injection control (UIC) programs to protect underground sources of drinking water (USDW's). The state of North Dakota intends to assume primary enforcement responsibility in order to:

1. Eliminate the burden on industry of dual regulation, which would be imposed by a separate federal program;

2. Make use of experienced state personnel with knowledge of local conditions for program operation; and

3. Allow the use of federal grant funds for program operation.

The State Department of Health (Department) has been designated as the lead agency and is responsible for administering grant funds and coordinating the state UIC program.

The Department's "Primacy Application" to EPA Region VIII will be submitted about January 15, 1982, and after it is determined that the submission is complete, EPA will have 90 days to approve or deny the application. This application includes the following elements:

1. A letter from the Governor requesting program approval;

2. A description of the Department's proposed program;

3. An Attorney General's statement regarding legal authority;

4. A Memorandum of Agreement setting forth the responsibilities of the Department and other state agencies and EPA under the proposed program;

5. Copies of all applicable state statutes and regulations; and

6. A showing that the public has had adequate opportunity to review and comment on the proposed program.

As part of its public participation showing (item 6 above), the Department will conduct a Public Hearing as listed:

Date:

Time:

Place:

The purpose of the hearing is to receive public comments on the proposed underground injection control program. Interested persons are encouraged to attend the hearing and to present relevant comments concerning the program and proposed rules. After reviewing comments that are received, the Department may modify some parts of the proposed state program as appropriate. Copies of comments received and of the Department's written responses to those comments will be included in the submission package.

II. OVERVIEW OF THE STATE UIC PROGRAM

The UIC program is an important part of the overall state groundwater strategy. With increasing demands for groundwater use and the impact of energy development on groundwater, the control of subsurface injections is vital.

Presently, the state of North Dakota permits one Class I well, 434 Class II wells, and four Class III wells. There are approximately 80 Class V wells which are known to exist in the state and are not permitted. It is anticipated that during the first five years of the state program, the permitting work load will increase as a result of broadened regulatory authority, increased energy production, and a response to more stringent regulations governing surface disposal of wastes which would make underground injection a more attractive method of disposal.

Authority to administer the UIC program in North Dakota will lie with three state agencies. Statutory authority for each class well is as follows:

1. Class I, IV, and V wells - State Department of Health, Division of Water Supply and Pollution Control.

2. Class II wells - State Industrial Commission, Oil and Gas Division.

3. Class III wells - State Industrial Commission, Office of the State Geologist.

The Industrial Commission Division of Oil and Gas is submitting an application for control of Class II wells and the State Department of Health is submitting an application for control of Class I, III, IV, and V wells separately under the SDWA.

After the state UIC program becomes effective, all new Class I, II, and III injection wells will require UIC permits. Existing Class I facilities which inject hazardous wastes must apply for UIC permits within six months and obtain a permit within four years of program approval. Other existing Class I and Class III operators must apply for permits within four years and be permitted within five years of program approval. Class IV wells are prohibited under the state program. Existing Class V facilities must submit inventory information within one year of program approval. Class II permits will continue to be handled by the Oil and Gas Division of the Industrial Commission.

Upon the effective date for the state program, all existing facilities in all well classes will be authorized to continue operating until such time as they obtain a permit, as required. All facilities must demonstrate compliance with appropriate construction, operating, reporting, and monitoring requirements and submit specific inventory information within one year of program approval.

The State Department of Health, Division of Water Supply and Pollution Control (WSPC) has primary responsibility for the technical and administrative evaluation of permit applications for Class I and V wells. During the permitting process, the WSPC may request technical assistance from the State Geologist and the State Water Commission. Prior to issuance of a permit, these agencies must also give their approval. The State Industrial Commission through the Office of State Geologist will have direct responsibility for all Class III permit applications.

The permitting agency will invite permit applicants to a preapplication conference at which the applicant will receive an application packet containing all necessary application forms, instructions on how to make application, and copies of applicable state statutes and regulations. The staff reviews the detailed information submitted on all aspects of the construction and operation of the facility, requests additional information if necessary, and prepares a fact sheet and a draft permit. After the draft permit is transmitted to the applicant for comment, public notice will be given to allow a 30 day comment period on the draft permit. If there is a significant degree of public interest, the director will hold a public hearing. If there are no significant comments on the draft permit, the permit will be issued.

After a permit is issued, certain phases of well construction may be inspected by the staff of the permitting agency. Injection activities may not commence until construction is complete and in compliance with the permit.

Compliance monitoring is the responsibility of the permitting agency. This monitoring will include on-site inspections and review of operating and monitoring reports submitted for permit compliance.

Enforcement actions will be pursued by the permitting agency. Enforcement actions may range from issuance of administrative orders to assessment of penalties by appropriate court action.

A preliminary inventory of all the injection wells excluding Class V wells has been completed. Class V wells are expected to be inventoried and assessed for pollution potential within the next two years.

The public is encouraged through public hearings, informational meetings, and literature to actively participate in the permitting process and the development of the program itself.

The detailed information in the following pages shall demonstrate that the state of North Dakota has the authority and ability to implement, administer,

and enforce an effective program to protect the underground sources of drinking water in the state of North Dakota.

III. ORGANIZATION AND STRUCTURE OF AGENCIES INVOLVED IN UIC

A. General Responsibilities

The State Department of Health has the statutory and regulatory authority to regulate all Class I, IV, and V injection wells through Chapter 33-25-01 of the North Dakota Administrative Code. The State Industrial Commission through the Office of the State Geologist has the statutory authority to regulate all Class III injection wells through Chapter 43-02-02 of the North Dakota Administrative Code. Each permitting agency will have the following general responsibilties:

1. Formulate and propose rules and regulations regarding subsurface injections.

2. Perform technical evaluations of injection well applications and prepare draft permits and amendments.

3. Issue, deny, amend, or cancel permits.

4. Witness certain aspects of construction, testing, operation, and closure of injection well facilities.

5. Perform on-site certification of permit requirements.

6. Review operation reports for permit or rule compliance.

7. Make recommendations of compliance strategies and corrective action when violations occur.

8. Maintain a data base of injection well information.

9. Provide testimony in public hearings or enforcement proceedings as required.

10. Respond to public inquiries and complaints regarding proposed or operating injection facilities.

11. Initiate and attend open meetings and conferences to ensure that the regulated community and the public at large are informed about underground injection activities.

12. Initiate and pursue appropriate enforcement actions when permit or rule requirements are violated.

The State Water Commission has no statutory authority to regulate or control injection wells. The primary functions of the Water Commission with regard to the UIC program will be:

1. Provide technical assistance in evaluating injection well permits.

2. To collect, store and retrieve data on groundwater quality, groundwater use, and groundwater levels.

B. North Dakota State Department of Health, Division of Water Supply and Pollution Control

The North Dakota State Department of Health has responsibility for most health related functions of state government as shown on figure 1. The environmental health section administers all the environmental health related activities and the Division of Water Supply and Pollution Control (figure 2) is part of that section.

The Division of Water Supply and Pollution Control is responsible for all water quality and pollution control activities in the state. Its program reflects the requirements of the state's water pollution control law which was enacted in 1967, the federal water pollution control law, and the SDWA. The overall state's program is made up of a number of subprograms and activities. The following is a list and explanation of the major subprograms.

1. Discharge Permit Program

This program provides for permits controlling the discharge of wastewaters into streams from municipalities, industries, and other entities that have wastewater to be disposed of. In 1975, the state took over all responsibilities for the program from EPA and has been handling it ever since.

2. Water Quality Standards - Water Quality Monitoring

The state adopted its first water quality standards in 1967. At the time the Department established the water quality standards, it was also necessary to establish a monitoring program that would provide current ongoing data on water quality in streams. At the present time, the Department and the United States Geologist Survey are monitoring over 200 stations in the state.

3. Water Quality Management Program (208)

The 208 program is addressing problems created by construction practices, agricultural practices and other soil disturbing activities. The program has developed a plan to control these problems and is now moving into the implementation phase.

4. Construction Grants

Construction Grants program provides federal assistance to help cities finance needed treatment facilities for municipal wastes. This program has been in operation since 1957 and the state has received as much as $20 million per year for the program. As part of the program, Congress has authorized the Federal Environmental Protection Agency to turn over much of the responsibilities

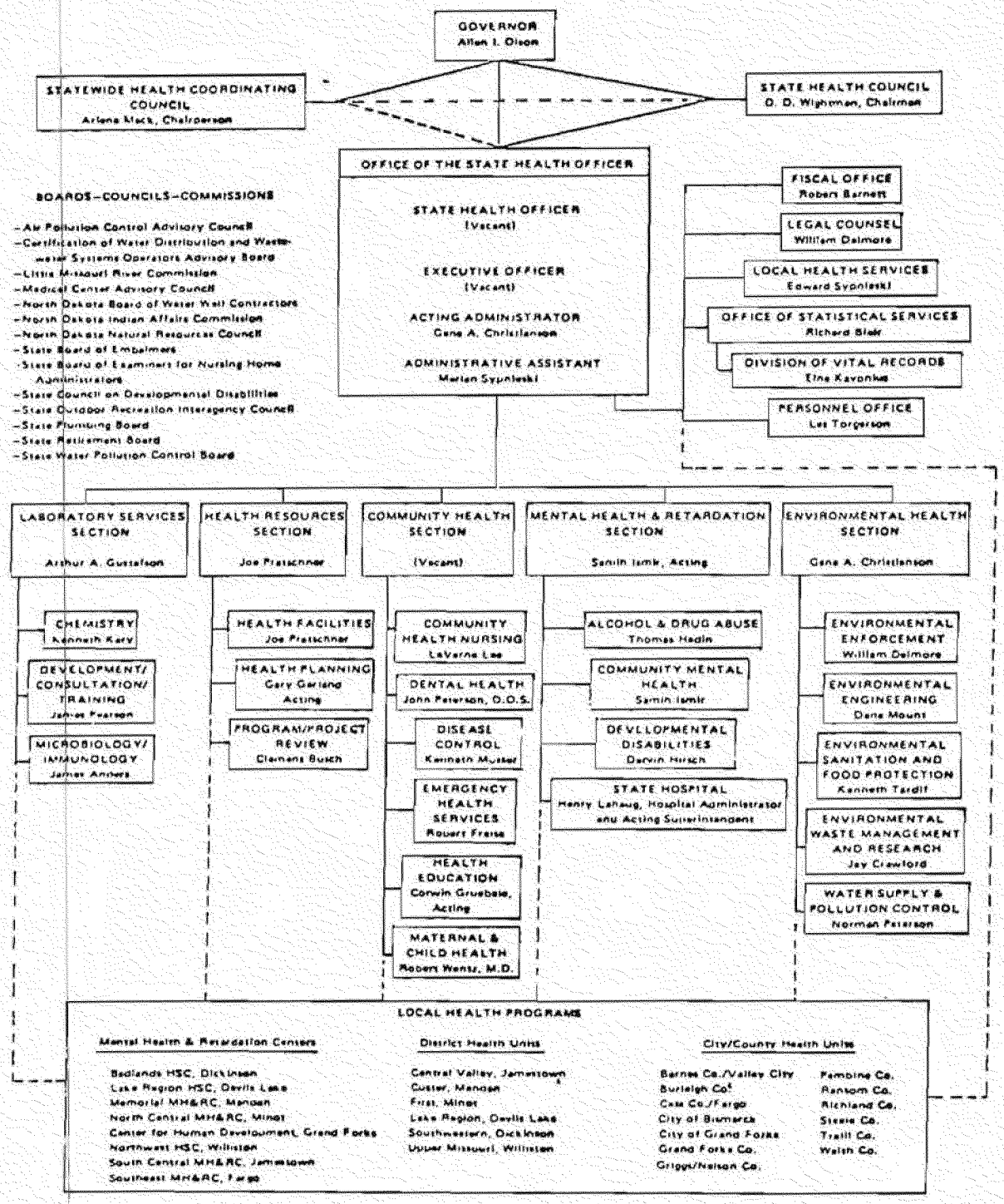

FIGURE 1. NORTH DAKOTA STATE DEPARTMENT OF HEALTH ORGANIZATIONAL CHART

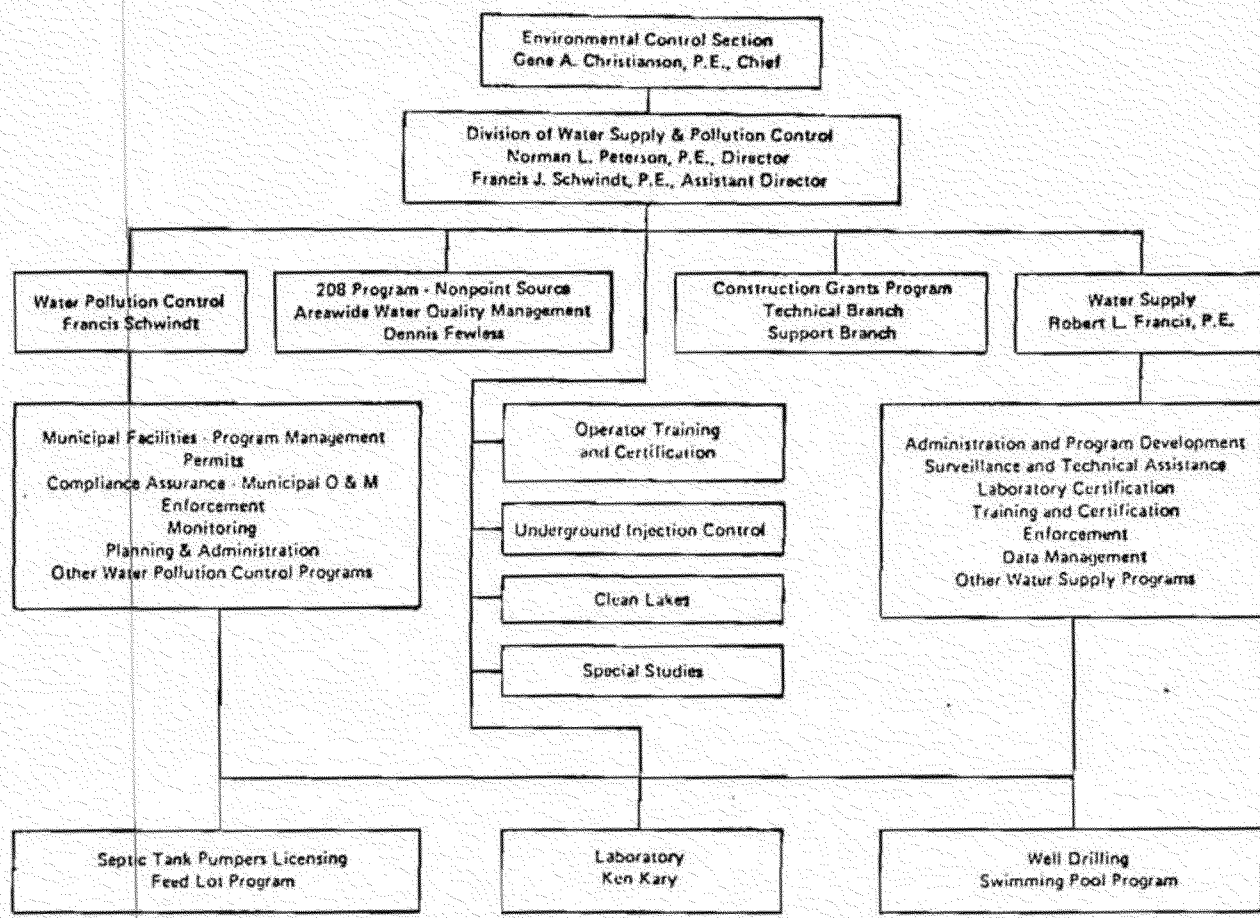

FIGURE 2. DIVISON OF WATER SUPPLY AND POLLUTION CONTROL ORGANIZATIONAL CHART

for operating this program to the state. The Department has now taken over most of the responsibilities and it is expected that within the next year, that North Dakota will have all the responsibilities for administrating the program as is permitted under the Federal Act.

5. Clean Lakes

The North Dakota state legislature appropriated $300,000 for the Department's use in matching federal monies and to develop lake programs to improve the water quality of the state's existing lakes. We are currently involved in a number of lake restoration projects.

6. Water Supply Program

This program is primarily concerned with providing clean, safe water to all users of public systems. Plans and specifications of all public water systems are submitted to the Department for review and approval prior to construction to assure compliance

with proper design criteria. Inventories of all public water systems are maintained including compliance with State and Federal regulations. Water supply samples are routinely analyzed by Department laboratories to assure freedom from contamination and compliance with mandatory drinking water standars. Yearly on-site surveys of all public water systems are made by Department engineers to assure proper operation, sanitation, and maintenance. Other program areas which the water supply section administers include:

a. Fluoridation program,

b. Plan review of public swimming pools,

c. Laboratory certification program,

d. Laboratory capability, and

e. Training and operator certification program.

C. Office of the State Geologist (North Dakota Geological Survey)

Most of the geological expertise available to the Department and other state agencies lies with the North Dakota Geological Survey (Figure 3). In addition, the Survey has the following statutory responsibilities:

1. The Survey is responsible for a complete account of the state's minerals and geology, the value and accessibility of these minerals, the preparation of maps and reports describing them and the collection and preservation of specimens.

2. The Industrial Commission acting through the office of State Geologist provides regulation of underground storage and retrieval of materials and the terminal disposal of wastes including spent nuclear fuels.

3. The State Geologist provides technical assistance to the Industrial Commission for regulation of oil and gas exploration, development and production.

4. The Industrial Commission acting through the office of State Geologist provides regulations for coal exploration.

5. The Industrial Commission acting through the office of State Geologist regulates geothermal resource exploration and development.

6. The Industrial Commission acting through the office of State Geologist provides for the regulation of subsurface mineral exploration and production.

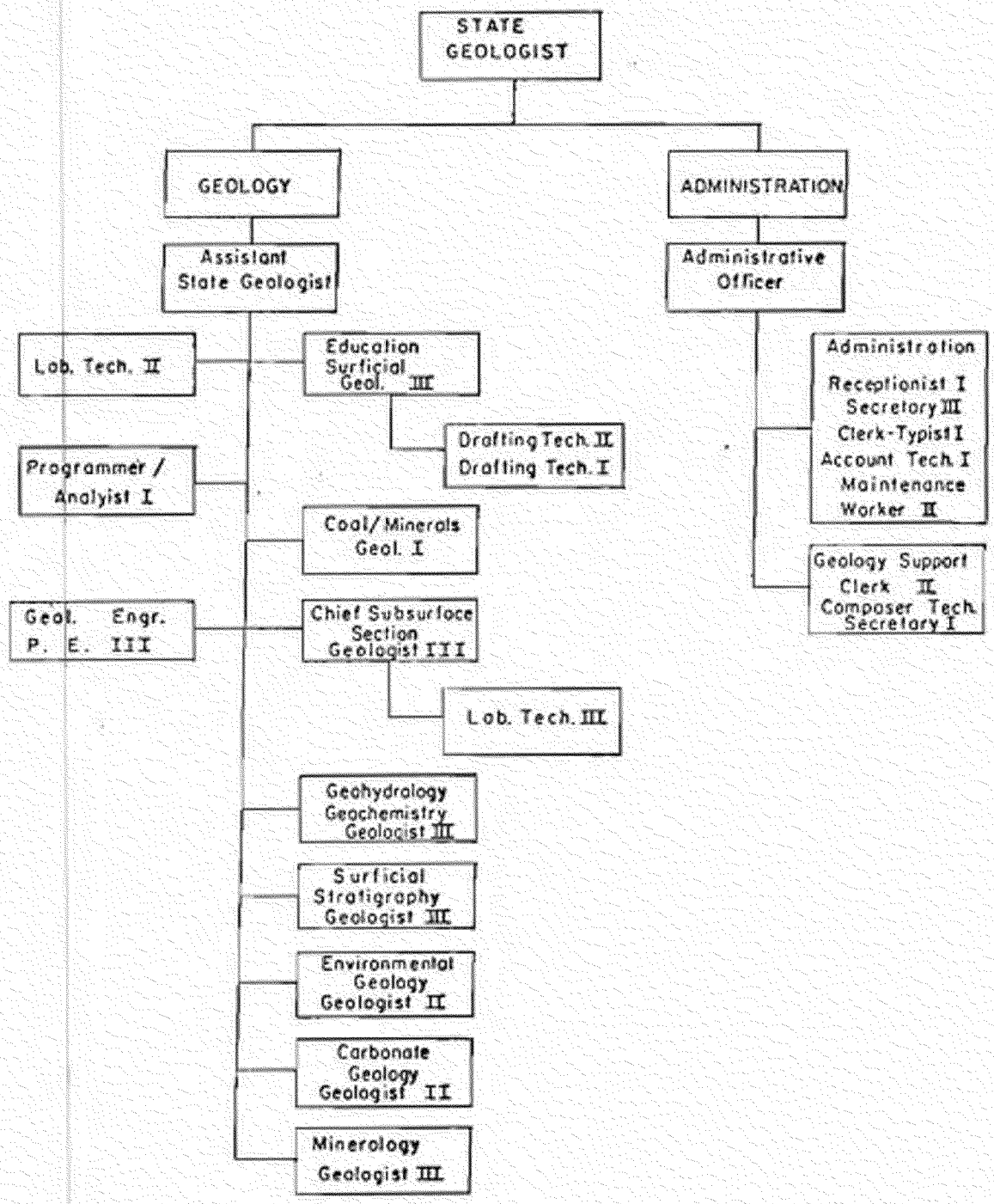

FIGURE 3. NORTH DAKOTA GEOLOGICAL SURVEY ORGANIZATIONAL CHART

D. North Dakota State Water Commission

The basic function of the State Water Commission is to manage the state's water resources, both surface and ground waters. With the governor as chairman, the Commission consists of the Commissioner of Agriculture and five other members appointed for six year terms by the Governor (figure 4). The Commission appoints the State Engineer to serve as Secretary and Chief Engineer.

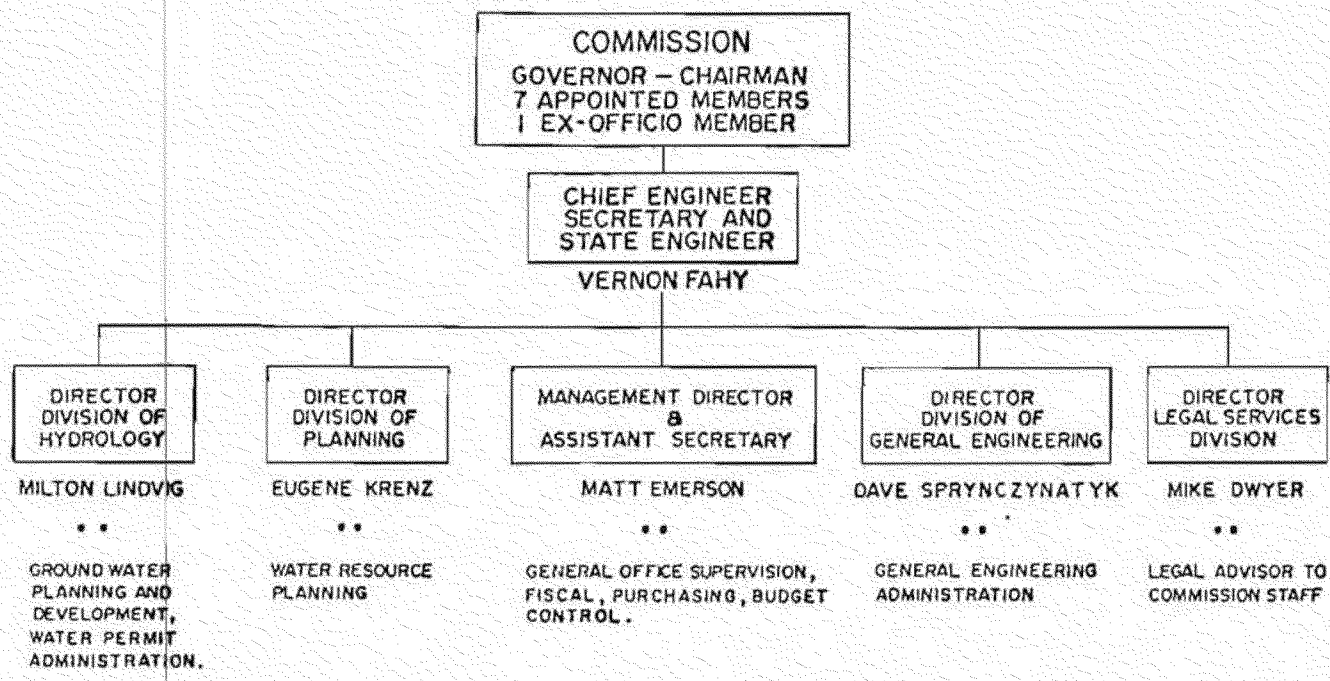

FIGURE 4. NORTH DAKOTA STATE WATER COMMISSION ORGANIZATIONAL CHART

The objectives of the Commission are water conservation, flood control, and water care. To reach those goals, the Commission has authority to investigate, plan, regulate, undertake, construct, establish, maintain, control, and supervise all works, dams, public and private projects, which in its judgment may be necessary or advisable. The Commission also cooperates with federal agencies in making water facility projects available to the public; inventories both surface and ground water; issues water permits under water law administration; and prepares and maintains a state-wide master plan for future water resources development.

The Division of Hydrology is responsible for the development and management of the state's groundwater resources and has the following objectives:

1. Identify the availability and quality of the state's groundwater resources on a county basis.

2. Conduct studies for municipalities and other public entities in an effort to seek a solution to a particular water supply problem.

3. Assess impacts on existing water supply developments in an aquifer or watershed on water levels, stream flow, and water quality for the purposes of allocation and management.

4. Construction and operation of predictive models that simulate hydrologic conditions for the purpose of developing viable water management programs and assist in the equitable allocation of the resource in areas of development.

5. Provide orderly processing of water permit applications for the equitable allocation of the resource.

6. Provide recommendations on individual water permit applications to the state engineer on the availability of water and impact on senior appropriations for the equitable allocation and management of the resource.

7. Provide the orderly storage and retrieval of water permit records.

8. Maintain a record of the utilization of each conditional water permit and water right.

9. Collect, store, and disseminate data on stream flow, groundwater levels, water quality, and water use.

IV. STATE UIC PERMITTING PROCESS

The WSPC is responsible for the technical evaluation of injection well permit applications and for the formulation and drafting of permit provisions for Class I, IV, and V wells. The office of State Geologist and the State Water Commission will act as technical advisors in the approval process of these permits and sign off on the permit prior to issuance. The State Geologist is responsible for the technical evaluation of injection well applications and drafting of permit provisions for Class III wells.

A. Class I Injection Well Permits

Class I wells are wells used to inject hazardous waste and other industrial and municipal waste disposal wells which inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

A preapplication conference between the applicant and the Water Supply and Pollution Control staff is not mandatory but is recommended. Either before or during the preapplication conference, the applicant will receive a preapplication packet which contains the following information:

1. An application form with explanation and examples.

2. Copies of all state statutes and regulations in regards to the permit.

3. A listing of all information which the applicant must submit.

When the Department receives the application, it will be reviewed for completeness and if necessary additional information will be requested. Each applicant must provide the information requested in Chapter 33-25-01 of the North Dakota Administrative Code and the permit application. At a minimum, the Department will evaluate the following information before issuing a draft permit:

1. Maps showing the injection wells for which a permit is sought and the applicable area of review. The map must show the number or name and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines, quarries, water wells, and other pertinent surface features including residences and roads.

2. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone.

3. Maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation, and the direction of water movement where known in each USDW which may be effected by the proposed injection.

4. Maps and cross sections detailing the geologic structure of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Proposed operating data which should include average and maximum daily rate and volume of fluid to be injected, average and maximum injection pressure, and source and analysis of chemical physical radiological and biological characteristics of injection fluids.

7. Proposed formation testing program to obtain analysis of chemical, physical, and radiological characteristics of and other information on the receiving formation.

8. Proposed stimulation program.

9. Proposed injection procedure.

10. Engineering drawings of the surface and subsurface construction details of the system.

11. Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water.

12. Corrective action proposed to be taken for wells within the area of review which penetrate the injection zone and are not properly completed or plugged.

13. Construction procedures including the cementing and casing program, logging procedures, deviation checks, and a drilling, testing and coring program.

14. A certificate that the applicant has assured through a performance bond or other appropriate means the resources necessary to close, plug or abandon the well.

15. Discussion of the qualifications and training of injection operations supervisory personnel.

16. Any other information the staff requires to properly evaluate the application such as proposed observation wells, etc.

17. Expected changes in pressure, native fluid displacement, direction of movement of injection fluid.

During the technical evaluation, the staff may require any additional information. Upon completion of the evaluation by the State Geologist and State Water Commission, the Department shall tentatively decide whether to prepare a draft permit or to deny the application. If the Department decides to prepare a draft permit, a public notice will be issued. The public notice will follow procedures as outlined in Chapter 33-75-01 of the North Dakota Administrative Code.

If the Department decides to prepare the draft permit, it will contain all required permit conditions, compliance schedule requirements, monitoring requirements and specific requirements for construction, corrective action, operation, hazardous waste management, reporting, plugging and abandonment, financial responsibility, mechanical integrity, and any other conditions the director may impose. If the draft permit is for a major facility, a fact sheet will be prepared.

During the public comment period, any interested person may request a public hearing. If there is a significant degree of public interest in the draft permit, the Department may hold a public hearing at its discretion. Notice of public hearing is published at least 30 days prior to the hearing date. At the completion of the hearing, the hearing officer forwards his findings of fact and recommendations to the Department. The Department may then approve as written, modify and approve, or deny the application. The Department will issue a response to comments received during the hearing process.

The permit must be issued prior to the construction or conversion of a new well. Existing wells will achieve compliance with construction requirements prior to permitting or according to a compliance schedule established as a permit condition. New injection wells shall be in compliance with construction requirements prior to commencing injection

operations. The Department will consider the following information prior to granting approval for the operation of a Class I well:

1. All available logging and testing program data on the well.

2. A demonstration of mechanical integrity.

3. The actual operating data.

4. The results of the formation testing program.

5. The actual injection procedure.

6. The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone.

7. The status of corrective action on defective wells in the area of review.

Prior to granting approval for the plugging and abandonment of a Class I well, the Department will consider the following information:

1. The type and number of plugs to be used.

2. The placement of each plug including the elevation of the top and bottom.

3. The type and grade and quantity of cement to be used.

4. The method for placement of the plugs.

B. Class II Injection Well Permits

Class II wells are wells which inject fluids which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations unless those waters are classified as a hazardous waste, wells which inject fluid for enhanced recovery of oil or natural gas, and wells used for the storage of hydrocarbons which are liquid at standard temperature and pressure.

Class II permit applications will be handled by the Industrial Commission Division of Oil and Gas. They are submitting their own primacy application under Section 1425 of the SDWA.

C. Class III Injection Well Permits

Class III wells are wells which inject for extraction of minerals which include mining of sulfur by the Frasch process, in situ production of uranium or other metals, and solution mining of salts or potash.

Applicants for Class III permits are invited to attend a preapplication conference with the office of the State Geologist. At this conference, the applicant is informed of all information to be developed and submitted to the staff for review. He will receive a preapplication packet which contains the following information:

1. An application form with explanation and examples.

2. Copies of all state statutes and regulations in regard to the permit.

3. A listing of all information which the applicant must submit.

When the State Geologist receives the application, he will review it for completeness, and if necessary, will request additional information. All information requested in Chapter 43-02-02 of the North Dakota Administrative Code and the permit application must be submitted. At a minimum, the State Geologist will evaluate the same information as specified for Class I wells described previously before issuing a permit.

Upon completion of the evaluation, the State Geologist shall decide whether to prepare a permit or to deny the application. If a permit is prepared, a hearing is required. Notice of public hearing will be published at least 30 days prior to the hearing date. At the hearing, the State Industrial Commission will receive comments. After reviewing the comments and consulting the State Geologist, the Commission will make a decision either to deny or issue the permit.

The permit must be issued prior to the construction or conversion of a new well. Existing wells will achieve compliance with construction requirements prior to permitting or according to a schedule established as a permit condition. New injection wells shall be in compliance with construction requirements prior to commencing injection operations. The State Geologist will consider the following information prior to granting approval for the operation of a Class III well:

1. All available logging and testing program data on the well.

2. A demonstration of mechanical integrity.

3. The actual operating data.

4. The results of the formation testing program.

5. The actual injection procedure.

6. The status of corrective action on defective wells in the area of review.

Prior to granting approval for the plugging and abandonment of a Class I well, the State Geologist will consider the following information:

1. The type and number of plugs to be used.

2. The placement of each plug including the elevation of the top and bottom.

3. The type, grade and quantity of cement to be used.

4. The method for placement of the plugs.

D. Class IV Injection Well Permits

Class IV wells are wells used to dispose of hazardous wastes or radioactive wastes into or above a formation which, within one quarter mile of the well, contains an underground source of drinking water and wells used to dispose of hazardous wastes which cannot be classified under Class I wells (e.g. wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been exempted).

The injection well inventory utilized all existing files and records to document existing injection wells in the state. There were no Class IV wells found operating in North Dakota. Chapter 33-25-01 of the North Dakota Administrative Code prohibits all Class IV wells and if any are found in the future they will be plugged and abandoned immediately.

E. Class V Injection Well Permits

Class V wells are injection wells not included in Classes I, II, III, or IV. Class V wells include:

1. Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;

2. Cesspools, including multiple dwelling, community or regional cesspools, or other devices that receive wastes, which have an open bottom and may have perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non-residential cesspools which receive solely sanitary wastes and have the capacity to serve fewer than 20 persons a day;

3. Cooling water return flow wells used to inject water previously used for cooling;

4. Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;

5. Dry wells used for the injection of wastes into a subsurface formation;

6. Recharge wells used to replenish the water in an aquifer;

7. Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water;

8. Sand backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines;

9. Septic systems used to inject the waste or effluent from a multiple dwelling, business establishment, community, or regional business establishment septic tank. The UIC requirements do not apply to single family residential septic system wells, nor to non-residential septic system wells which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day;

10. Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

11. Stopes leaching, geothermal and experimental wells;

12. Brine disposal wells for halogen recovery processes;

13. Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.

14. Injection wells associated with the recovery of geothermal energy for heating aquaculture and production of electricity.

A Class V well may require a permit if it is creating or could create contamination of a USDW which may adversely affect the health of persons. Currently, Class V injection wells are authorized by rule which is contained in Section VIII-B of the report. After the assessment is completed, a more comprehensive regulatory program will be developed for Class V wells if needed.

V. TECHNICAL REQUIREMENTS FOR UIC PERMITS

A. Construction Requirements

1. General

The state UIC program will evaluate all aspects of proposed construction of Class I and III wells and will maintain construction standards that protect USDW's. In addition, many phases of well construction and testing will be supervised and witnessed in the field by the permitting agency.

The suitability of a proposed site for underground injection is evaluated by the appropriate staff prior to issuing a permit. In determining the suitability of a proposed site, the permitting agency reviews the information submitted in the technical report accompanying the application and any information developed in the preapplication conference. The following factors are among those considered:

1. Site location relative to population distribution.

2. Location relative to fresh water resources, water wells, and areas of groundwater withdrawal.

3. Local use of groundwater.

4. Site topography for evaluation of flood hazard, drainage problems, etc.

5. Ownership and use of adjacent land.

6. Details of surficial geology including locations of known or suspected faults.

7. Details of subsurface geology including presence of an adequate injection reservoir and confining strata, or presence of a suitable ore body, and locations of all known or suspected faults.

8. Locations of all known wells in the area and the probability of the presence of unknown abandoned well holes.

In addition, the staff will perform site inspections prior to construction to confirm information submitted with the application and to determine the accessibility of the proposed site for drilling and other construction equipment.

2. Mechanical Integrity Testing

Chapter 43-02-02 and Chapter 33-25-01 of the North Dakota Administrative Code require that before any Class I or III injection well is put into operation and prior to the issuance of a permit for each well and at a minimum of once every five years thereafter, the permittee shall demonstrate the mechanical integrity of the well or system.

An injection well has mechanical integrity if it meets the following criteria:

1. There is no significant leak in the casing, tubing, or packer. One of the following methods must be used to evaluate the absence of significant leaks:

   a. Monitoring of pressure.
   b. Pressure test with liquid or gas.

2. There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore. One of the following methods must be used to determine the absence of significant fluid movement:

a. The results of a temperature or noise log.
b. A cement bond log.

As a permit condition, the permitting agency will require that mechanical integrity be demonstrated before an injection well is put into operation. Thereafter, Class I and Class III injection wells must demonstrate mechanical integrity at least every five years.

3. Class I Construction Requirements

All Class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

1. The depth to the injection zone.

2. Injection pressure, external pressure, internal pressure, and axial loading.

3. Hole size.

4. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material).

5. Corrosiveness of injected fluid, formation fluids, and temperatures.

6. Lithology of injection and confining intervals.

7. Type or grade of cement.

All Class I injection wells, except those municipal wells injecting non-corrosive wastes, shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

The use of other alternatives to a packer may be allowed with the written approval of the Department. To obtain approval, the operator shall submit a written request to the Department which shall set forth the proposed alternative and all technical data supporting its use. The Department shall approve the request if the alternative method will reliably provide a comparable level of protection to the USDW. The Department may approve an alternative method solely for an individual well or for general use.

In determining and specifying requirements for tubing, packer, or alternatives, the following factors shall be considered:

1. Depth of setting.

2. Characteristics of injected fluid (chemical content, corrosiveness, and density).

3. Injection pressure.

4. Annular pressure.

5. Rate, temperature and volume of injected fluid.

6. Size of casing.

Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Department. At a minimum, such logs and tests shall include:

1. Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information, that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:

   a. For surface casing intended to protect underground sources of drinking water:

      (1) Resistivity, spontaneous potential, and caliper logs before the casing is installed.

      (2) A cement bond, temperature, or density log after the casing is set and cemented.

   b. For the intermediate and long strings of casing intended to facilitate injection:

      (1) Resistivity, spontaneous potential, perosity, and gama ray logs before the casing is installed.

      (2) Fracture finding logs.

(3) A cement bond, temperature, or density log after the casing is set and cemented.

At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class I wells:

1. Fluid pressure,

2. Temperature,

3. Fracture pressure,

4. Other physical and chemical characteristics of the injection matrix, and

5. Physical and chemical characteristics of the formation fluids.

4. Class III Construction Requirements

Requirements for Class III wells include:

1. All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between USDW's. The State Geologist may waive the cementing requirements for new wells in existing projects or portions of existing projects where he has substantial evidence that no contamination of USDW would result. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

   a. Depth to the injection zone.
   b. Depth to the bottom of all USDW's.
   c. Estimated maximum and average injection pressures.
   d. The nature of injection and formation fluids.
   e. Lithology of injection and confining zones.
   f. External pressure, internal pressure, and axial loading.
   g. Hole size.
   h. Size and grade of all casing strings.
   i. Class of cement.

2. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the State Geologist. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar

data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. Deviation checks shall be conducted on all holes where pilot holes and reaming are used, unless the hole will be cased and cemented by circulating cement to the surface. Where deviation checks are necessary, they shall be conducted at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

3. Where the injection zone is a formation which is naturally water bearing, the following information concerning the injection zone shall be determined or calculated for new Class III wells or projects:

   a. Fluid pressure.
   b. Fracture pressure.
   c. Physical and chemical characteristics of the formation fluids.

4. Where the injection zone is not a water bearing formation, only the fracture pressure must be submitted.

5. Where the injection is into a formation which contains water with less than 10,000 milligrams per liter TDS, monitoring wells shall be completed into the injection zone and into any USDW above the injection zone.

6. Where injection is into a formation which does not contain water with less than 10,000 milligrams per liter TDS, no monitoring wells are necessary in the injection strata.

7. Where the injection wells penetrate a USDW in an area subject to susidence or catastrophic collapse, an adequate number of monitoring wells shall be completed into the USDW outside the physical influence of the subsidence or catastrophic collapse.

B. Corrective Action

The state may require that corrective action be taken when any well within the area of review of a Class I or Class III injection operation is inadequately constructed, plugged, or abandoned so as to pose a hazard to a USDW.

The area of review is the area surrounding an injection well or a group of injection wells, for which pressure data are collected and artificial penetrations are evaluated for possible corrective action.

The area of review for Class I and V injection wells shall be determined as follows:

1. Zone of endangering influence. The zone of endangering influence shall be that area, the radius of which is the lateral distance from an injection well, field or project, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into a USDW.

2. Fixed radius. A fixed radius around the well, field or project of ¼ mile minimum.

If the area of review is determined by a mathematical model for the zone of endangering influence, the permissible radius is the result of the calculation or measurement, even if it is less than ¼ mile.

The area of review for each Class III injection well shall have a radius of not less than ¼ mile around each well or field as may be determined by the State Geologist.

The Department may modify the area of review for any Class I or II injection well application after appropriate review. Justification for modifying area of review requirements may include favorable geologic conditions, great depth to injection zone, small anticipated injection pressures and fluid volumes, or short operating lifetime for the project.

In general, the staff reviews data submitted by the applicant, evaluates the proposed corrective action plan and, if the plan is approved, may incorporate it as a permit provision. The following are requirements for corrective action:

1. Applicants for Class I injection well permits shall identify all known wells which penetrate the injection zone within the area of review.

2. For wells in the area of review which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into an USDW.

3. The permitting agency's review of the plan for corrective action shall consider the following criteria and factors:

   a. Toxicity and volume of the injected fluid.
   b. Toxicity of native fluids or by-products of injection.
   c. Potential affected population.
   d. Geology.
   e. Hydrology.
   f. History of the injection operation.
   g. Completion and plugging records.
   h. Abandonment procedures in effect at the time the well was abandoned.
   i. Hydraulic connections with an USDW.

4. Where the corrective action plan is adequate, the plan shall be incorporated into the permit as a condition.

5. Where the corrective action plan is inadequate, the permitting agency shall:

   a. Require the applicant to revise the plan.
   b. Prescribe a corrective plan as a permit condition.
   c. Deny the permit.

6. Permits for existing injection wells that require corrective action shall include a compliance schedule requiring corrective action as soon as possible.

7. New injection wells may not be permitted until all required corrective action has been taken.

8. The permitting agency may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

C. Operating, Monitoring and Reporting Requirements

State UIC regulations provide specific operating, monitoring and reporting requirements for Class I and Class III injection operations. Class V wells will initially operate under general rules prohibiting pollution of USDW's and requiring submission of inventory data within one year of program approval. Additional rules regarding construction, operation, monitoring and reporting of Class V wells will be drafted as necessary after the inventory and assessment of Class V wells is completed.

1. Operating Requirements

For all Class I and III wells, the permit shall establish that:

1. The injection pressure at the well head shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propogate existing fractures in the injection zone, initiate fractures in the confining zone or cause the movement of injection or formation fluids into a USDW.

2. Injection between the outermost casing protecting USDW's in the well bore is prohibited.

For Class I wells, unless an alternative to tubing and packer has written approval from the Department, the annulus between the tubing and the long string of casings shall be filled with a fluid and a pressure shall be maintained on the annulus.

For Class I wells, injecting hazardous wastes, the surface facilities must comply with the North Dakota State Department of Health rules and standards for hazardous waste management facilities.

2. Monitoring Requirements

Each UIC permit shall establish monitoring requirements as follows:

1. Class I monitoring shall, at a minimum include:

   a. The analysis of injected fluids with sufficient frequency to yield representative data of their characteristics.

   b. Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between tubing and the long string of casing.

   c. A demonstration of mechanical integrity at least once every five years during the life of the well.

   d. The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the USDW, the parameters to be measured and the frequency of monitoring.

2. Class III monitoring shall, at a minimum, include:

   a. The analysis of the physical and chemical characteristics of the injected fluid with sufficient frequency to yield representative data on its characteristics.

   b. Monitoring of injection pressure and either flow rate or volume semi-monthly, or metering and daily recording of injected and produced fluid volumes as appropriate.

   c. Demonstration of mechanical integrity at least once every five years during the life of the well for salt solution mining.

   d. Monitoring of the fluid level in the injection zone semimonthly, where appropriate and monitoring of the parameters chosen to measure water quality in the monitoring wells semimonthly.

   e. Quarterly monitoring of wells adjacent to the injection site to detect any migration from the injection zone into a USDW.

   f. All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used

in cases of facilities consisting of more than one injection well operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

g. In determining the number, location, construction and frequency of the monitoring well, the following criteria shall be considered:

(1) The population relying on the USDW affected or potentially effected by the injection operation.

(2) The proximity of the injection operation to points of withdrawal of drinking water.

(3) The local geology and hydrology.

(4) The operating pressure and whether negative pressure grading is being maintained.

(5) The toxicity and volume of the injected fluid, the formation water, and the process of byproducts.

(6) The injection well density.

3. Reporting Requirements

1. For Class I injection wells, reporting requirements shall, at a minimum, include:

a. Quarterly reports to the Division of Water Supply and Pollution Control on:

(1) The physical, chemical and other relevant characteristics of injection fluids.

(2) Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure.

(3) The results of monitoring of wells in the area of review.

b. Reporting the results with the first quarterly report after the completion of:

(1) Periodic tests of mechanical integrity.

(2) Any other tests of the injection well conducted by the permittee if required by the director.

(3) Any well workover.

2. For Class III injection wells, reporting requirements shall, at a minimum, include:

a. Quarterly reporting to the State Geologist on required monitoring.

b. Results of mechanical integrity and any other periodic test required by the State Geologist reported with the first regular quarterly report after the completion of the test.

c. Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

D. Plugging and Abandonment

Each permit applicant submits a proposed plugging and abandonment plan for the permitting agency's review. The proposed plan includes such information as:

1. The type of plugging method.

2. Grades and anticipated volumes of cement.

3. Size and placement depth of cement plugs.

4. A discussion of the procedures for preplugging hole conditioning.

5. Type and density of mud or other fluid left in the hole.

6. The sequence of steps involved in the plugging operation.

Prior to abandoning Class I and III wells, the wells shall be plugged with cement in a manner which will not allow the movement of fluid either into or between USDW's. The State Geologist may allow Class III wells to use other plugging materials if he is satisfied that such materials will prevent movement of fluids into or between USDW's.

The placement of cement plugs shall be accomplished by one of the following:

1. The balance method;

2. The dump bailer method;

3. The two plug method; or

4. An approved method which will reliably provide a comparable level of protection to USDW's.

The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the permitting agency prior to the placement of the cement plugs.

For individually permitted wells, the information listed above may be specific and quantitative. However, for area permits, the procedures, materials, etc. may be generalized and applied to all plugging operations performed within the permit area. In the case of Class III well field which are in or underlying exempted aquifers, the plan shall demonstrate that contaminants from the mine zone will not move into USDW's. Where it is necessary, the permitting agency may prescribe aquifer cleanup and restoration to ensure that such contaminant migration will not occur. In addition to the plan, each applicant must also provide a certification of financial responsibility as a guarantee that the injection operation will be plugged and abandoned in the manner prescribed by the appropriate division. The Division of Water Supply and Pollution Control (Class I wells) and the North Dakota Geological Survey (Class III wells) must be notified prior to commencement of plugging operations. Such notice shall be at least 90 days.

VI. STATE COMPLIANCE MONITORING PROGRAM

A. Plan Review

The permitting agency must verify that certain injection well facility construction, completion, operation, maintenance, and closure procedures are performed according to approved plans and specifications and meet all permit or regulation requirements.

These objectives are accomplished by reviewing appropriate plans and reports, performing on-site inspections, responding to complaints, and where necessary, referring noncompliance to enforcement and legal council for appropriate enforcement action.

Plans and reports reviewed by the staff in the review process may include but are not restricted to:

1. Revisions to construction plans filed after permit issuance.

2. Well completion reports including results of required logging and other testing.

3. Results of injectivity and pump tests, mechanical integrity tests, and any other required tests.

4. Bottom hole pressure reports and updated evaluations of the effects of injection on the injection zone including fluid volume, injection rate, and injection pressure data.

5. Workover plans and workover reports describing construction or maintenance performed.

6. Updating, plugging, and abandonment plans and reports of completion of plugging, abandonment, and other site closure activities.

7. Any other plans or test results connected with the proper construction, operation, and maintenance of well associated surface facilities.

B. Site Inspections

Site inspections to verify or witness construction, operation and maintenance procedures may be conducted as necessary when certain construction operations begin or in response to a complaint or other indication that a problem may exist. Construction elements and testing that may be witnessed or supervised by the permitting agency provided budget and workload requirements permit include:

1. Setting and cementing surface casing.

2. Cementing long string casing.

3. Well logging and coring operations.

4. Pressure testing of tubing and casing.

5. Formation pressure tests, injectivity tests or pump tests.

6. Installation and maintenance of instrumentation.

7. Work required by any corrective action plan.

8. Well workovers.

9. Placement of monitoring wells or other equipment.

10. Placement of cement plates and other abandonment procedures.

11. Mechanical integrity testing.

C. Complaints

Complaints alleging improper construction, completion, operation, or maintenance at an injection well facility are investigated by the permitting agency. Response to complaints may consist of:

1. Establishing the nature and authenticity of the complaint.

2. Reviewing appropriate Department files.

3. Establishing contact with the operator to verify the complaint and discuss corrective action.

4. Performing a site inspection to determine if a problem exists.

5. Referring the complaint after an investigation and documentation to legal council which could evolve into a hearing or litigation in court by the Department.

D. Monitoring Program

The compliance monitoring program will be handled by the office of the State Geologist for the Class III wells and the Division of Water Supply and Pollution Control for the Class I and V wells. Both monitoring programs will be similar and the main objective of these programs is to verify attainment of and maintain compliance with provisions of permits, rules and other orders of the respective agencies. The objectives are achieved by:

1. Conducting inspections of injection well facilities.

2. Reviewing self reporting, monitoring, recordkeeping, and certain operating and maintenance activities.

3. Investigating unauthorized injection activities and unauthorized facilities.

4. Participating in appropriate water quality sampling programs.

5. Responding to citizen complaints.

Site inspections will be conducted by the permitting agency. Inspections will be conducted at least annually for all permitted injection facilities in order to:

1. Determine the probability of violation and indicate problems that may be causing or lead to violation.

2. Assist in identifying problems that exist or that have a potential for developing.

3. Update Department records on the facilities and on the operation of the facilities.

E. Annual Inspections

Annual inspections consist of (but are not limited to):

1. Observations of injection site, associated facilities, and monitoring wells.

2. Review of records to determine history of performance and compliance.

3. Evaluation of the operation and maintenance of the facility.

4. A review of all UIC permit conditions.

5. A review of any other permit conditions such as NDPDES permits or solid waste permits.

F. Compliance Inspections

Compliance follow-up inspections may be conducted at any time to:

1. Determine existence of a violation.

2. Provide basis for enforcement action.

3. Define type of violation.

4. Provide data to assist in determining cause of violation.

During compliance follow-up inspections:

1. A compliance inspection report is completed.

2. A sufficient number of samples is taken to determine compliance.

3. Physical data are evaluated to define specific problem areas and develop generalized corrective measures.

Site inspections and examination of operator records will be carried out under the authority of Section 38-12-02-4 and 61-28-04-10 of the North Dakota Century Code.

VII. NORTH DAKOTA ENFORCEMENT PROCEDURES

Any person violating the North Dakota Water Pollution Control Act (Chapter 61-28 of the North Dakota Century Code), any condition of a permit, or any rule or order of the Department is subject to enforcement action. The Department has the responsibility for initiating, pursuing, and resolving formal enforcement actions. Normal procedure dictates that reports of violation are forwarded to the Department for investigation and appropriate action. The North Dakota State Department of Health (Environmental Enforcement Division) will maintain a log of proposed and pending enforcement actions and will ensure such log is kept current. Attorneys in the Environmental Enforcement Division also serve as Assistant Attorneys General and thus keep the Office of Attorney General informed of pending enforcement actions and any needs for staff assistance.

Enforcement Procedures

Prior to taking formal enforcement action, the Department may:

1. By means of written correspondence, technical staff of the Water Supply & Pollution Control Division will notify an alleged violator of deficiencies and may require corrective action.

2. The Division of Environmental Enforcement will draft and issue a notice of violation to the alleged violator.

Formal enforcement proceedings may include:

1. Issuance of a letter detailing recommendations for corrective action and establishing a compliance period in which action shall be taken.

2. Issuance of an administrative order by the Department specifying corrective action and compliance schedule.

3. Signing of a stipulation between the Department and the alleged violator establishing a compliance schedule for corrective action.

4. Conducting an administrative hearing (formal or informal) pursuant to Chapter 28-32 of the North Dakota Century Code (Administrative Agencies Practice Act) and Article 33-22 of the North Dakota Administrative Code (Practice and Procedure). Such hearing may result in a stipulated agreement or further enforcement action.

5. All enforcement proceedings may result in amendment, revocation or suspension of any permit issued under authority of the State Underground Injection Control Program.

If further enforcement action is required:

1. The State may seek civil penalty of up to ten thousand dollars ($10,000) a day under Chapter 61-28 of the North Dakota Century Code (Control, Prevention, and Abatement of Pollution of Surface Waters) in district court.

2. The State also has the authority to seek injunction or judicial enforcement of any order issued under Chapter 61-28 of the North Dakota Century Code. The Attorney General represents the Department in all judicial actions.

Overall enforcement strategy of the Department is based on the following concerns:

Priority #1 Remove any potential pollution problem as soon as possible.

Priority #2 Prevent such problem from causing any further damage.

Priority #3 Ensure that proper corrective or cleanup actions are taken.

Priority #4 Ensure that same type of violation will not occur again.

Priority #5 Seek civil penalty for violation.

The Department will attempt to handle all minor violations through informal means or through use of correspondence between technical staff and the alleged violator. Enforcement staff will only be utilized if minor violations are not corrected in a timely fashion. The Department will have, as its main concern, those violations which may have significant affect on the environment of the State of North Dakota and which may endanger valuable resources, such as underground aquifers.

It has been, and will continue to be, Department policy to use only that amount of formal enforcement which is required to maintain compliance with the Act.

The Industrial Commission of the State of North Dakota, acting through the office of State Geologist, has statutory authority over Class III wells under the auspices of Chapter 38-12 of the N.D.C.C. The legal staff of the North Dakota State Department of Health will handle enforcement actions for the Commission and will utilize methods and procedures for enforcement similar to those outlined above. The only notable difference in procedure is the Commission's authority to seek a civil penalty of up to twelve thousand five hundred dollars ($12,500) per day for any statutory violation.

VIII. REQUIRED PROGRAM ELEMENTS

A. Priorities and Scheduling for the Issuing of Permits

North Dakota presently has one Class I well and four Class III wells. Since the number of wells is small, priorities for issuing permits during the first five years of program operation is not needed. Once the state receives primacy, the five existing wells will be immediately notified by letter of their obligation to apply and obtain a UIC permit.

B. Authorization of Injection by Rule

Authorization of injection by rule will be limited only to Class V wells according to Section 33-25-01-17 of the North Dakota Administrative Code. The specific text of the rule is as follows:

> All Class V wells shall be in compliance with Article 43-35 of the North Dakota Administrative Code (rules for water well construction and water well pump installation) and submit to the North Dakota State Department of Health a log of formations penetrated, well depth, casing size and type of injection fluid.

Owners or operators of Class V wells are required to submit inventory information within one year of program approval. The Class V inventory will enable use to inform owners and operators of their duty by a direct mailing. The Department will follow that with a statewide public notice informing them of the requirements.

C. Injection Well Inventory

The injection well inventory for North Dakota has been completed. Wells which were inventoried are the UIC Class I, II, III, and IV wells. Class V wells were not included in the inventory.

Basic information collected during the inventory includes:

1. Owner/operator (name and mailing address).
2. Nature of business.
3. Number of wells and location by township, range and section.
4. Source of injected fluids.
5. Type and volume of injected fluids.
6. Significant construction features.
7. Length of time in operation.
8. Status of the well.
9. Average injection pressures.
10. Thickness and depth of injection formation.
11. Name of local contact for further information.

The data for the inventory was obtained from:

1. Division files, other state agency files, U.S. Geological Survey information.
2. Existing permit files.
3. Information supplied by identified operators.
4. Field investigations.

Class I and III wells which are regulated by the Division of Water Supply and Pollution Control and the office of the State Geologist respectively will be few in number, therefore they will be manually inventoried quarterly and reported to EPA. The method in which Class II wells are inventoried will be described in the Oil and Gas Division's program description.

D. Underground Sources of Drinking Water

40 CFR 146 and other federal underground injection control regulations promulgated under the authority of the Safe Drinking Water Act are

directed to the protection of underground sources of drinking water (USDWS). Under federal definition, USDW's are aquifers which contain water currently used for human consumption or which contain 10,000 milligrams per liter or less total dissolved solids.

As described in state regulations, any underground water being used for drinking or domestic water, and any underground water less than 10,000 milligrams per liter of total dissolved solids which has not been exempted is a source of drinking water and is protected as such.

Currently, there is one Class I and one Class III well which dispose of fluids into the Dakota formation. The areas in which these injections occur have total dissolved solids concentrations greater than 10,000 milligrams per liter. However, the Dakota aquifer system has water which has a TDS level of 3,000 or less in some areas. Since there are existing Class II wells which inject into the Dakota in areas of 10,000 milligrams per liter TDS or less, portions of that aquifer must be exempted. This exemption will be submitted as part of the Oil and Gas Division's primacy application filed under Section 1425 of the Safe Drinking Water Act.

E. Class V Wells

The inventory and assessment of Class V wells is scheduled to begin in January of 1982 and culminate in December of 1982. In 1983, the Department will submit its assessment and recommend regulatory strategies to EPA. The following is an outline of the Class V assessment process:

1. Review inventory data for each type of Class V well,

2. Based on the initial review, determine which categories of wells might require different construction, operating, monitoring or reporting requirements from those provided by the authorization by rule,

3. For each well category that might need more regulation, obtain additional data on site geology, well construction, operating characteristics, fluid characteristics, etc., for a representative sampling of those wells. Additional information will be obtained by:

   a. Requesting additional data from the owner/operator,
   b. Consulting the Department and other state agency files,
   c. Performing site investigations, and
   d. Initiating a water quality sampling program.

4. Analyze the data and determine if the wells are operating so as to pose no endangerment to fresh water,

5. If no hazard is determined, then recommend continuation of regulation under the current authorization,

6. If a hazard does exist, then determine the additional construction, operating, monitoring, or reporting requirements necessary to eliminate the hazard,

7. Prepare a report summarizing the results of the inventory and Class V assessment and containing recommendations for the regulation of Class V wells, and

8. Initiate special studies as determined by initial phases of the assessment.

Section 33-25-01-21 of the North Dakota Administrative Code requires the owner or operator of any Class V injection well to notify the Department of its existence and provide inventory information within one year of effective date of the state's UIC program. This inventory information shall include:

1. Name of owner or operator of the well,

2. Location of the well,

3. Construction features of the well,

4. Nature and volume of injected fluids,

5. Legal contact, and

6. Any other additional information which the director requests.

IX. REPORTS

The Department will prepare and submit to EPA the following underground injection control program reports concerning Class I, III, IV, and V wells:

A. Midcourse evaluation reports. The Department shall submit two of these reports in each of the first two years of program operation, after the state has been granted primacy authority. The first report shall be submitted August 31, 1982. A subsequent report shall be submitted February 28, 1983. The initial submission shall include for each permittee the information required in 40 CFR Parts 146.15 (Class I injection wells) and 146.35 (Class III injections wells). Subsequent reports shall include the information required in 40 CFR Parts 146.15 and 146.35 for all permittees either by reference to the previous submission or by a new submission for each permittee not covered in previous reports, and for each permittee previously covered which needs to be updated or revised. These reports are submitted during the first two years of operation of the state UIC program on February 28 and August 31.

B. Annual reports. Annual reports shall be submitted to EPA within 60 days after December 31 in a manner and form prescribed by EPA and consisting of the report elements, as relevant, specified in 40 CFR Part 122.18(c)(4)(i).

C. Quarterly noncompliance reports. Four reports, each for a three month period, shall be submitted to EPA for each year's operation. These reports will be submitted on May 31, August 31, November 30, and February 28, in the format required by and contained in the noncompliance information on major facility permittees specified in 40 CFR Part 122.18(a).

D. Annual noncompliance reports. These shall be submitted to EPA by February 28 and should cover the entire calendar year. The reports will contain the nonmajor facility permittee noncompliance information specified in 40 CFR 122.18(c)(1). The reports will be submitted according to the format specified by 40 CFR 122.18(c)(1).

E. A financial status report for the UIC grant shall be submitted within 90 days after termination of the budget period.

X. UIC FUNDING AND STAFFING REQUIREMENTS

A. State Department of Health, Division of Water Supply and Pollution Control

Table 1 gives the projected UIC manpower requirements by major program element and shows projected expenditures for fiscal years 1982 and 1983. The projections in Table 1 are estimates and may need revision. The table contains only the work load of the Water Supply and Pollution Control Division.

Table 1

DIVISION OF WATER SUPPLY AND POLLUTION CONTROL
ESTIMATED UIC STAFFING REQUIREMENTS

Manpower Requirements

	Objective	Man Years (Annual)	Fiscal 82	Fiscal 83
1.	Administration			
	Engineer	.3	15,000	10,000
	Secretary	.1		
2.	Training and Technical Assistance			
	Engineer	.1	2,000	4,000
3.	Permit Processing			
	Engineer	.5	30,000	25,000
	Secretary	.2		
4.	Enforcement and Surveillance			
	Technician	.2	5,000	8,000
5.	Public Participation			
	Engineer	.1	2,000	1,000
6.	Data Management			
	Engineer	.2	6,000	6,000
		Total 1.7	60,000	54,000

Staff Requirements

Staff	Number
Engineer	2
Technician	1
Secretary	1
	4*

*Some of the Water Supply and Pollution Control staff members will only devote part of their time to UIC functions.

B. Office of State Geologist

Personnel involved in the regulation of subsurface mineral exploration and production are also involved in the conducting of other regulatory responsibilities of the State Geologist. At the present time, there are only two Class III subsurface mineral extraction facilities in the state. The cost in manhours, equipment, and money to properly regulate Class III wells in the state is therefore minimal.

The personnel involved include; State Geologist, assistant State Geologist, subsurface geologist, staff geologist, petroleum/geologist engineer, file clerk, and core and sample technician.

Costs of administering the program are difficult to break out of the survey's budget. It is estimated that two percent of the time of the personnel listed above is devoted to the program (Table 2).

Table 2

OFFICE OF THE STATE GEOLOGIST
ESTIMATED UIC STAFFING REQUIREMENTS

	Objective	Man Years (Annual)	Fiscal 82	Fiscal 83
1.	Administration			
	State Geologist	.05	1,500	1,500
	Secretary	.05	1,000	1,000
2.	Permit Processing			
	Subsurface Geologist	.1	3,000	2,000
3.	Enforcement and Surveillance			
	Geologist Engineer	.05	2,000	2,500
		.25	7,500	7,000

C. State Water Commission

The staffing requirements for the Water Commission will include one hydrologist and one technician for the primary function of storage and retrieval of groundwater data (Table 3). It is anticipated that first year costs will be higher than subsequent years due to computer program changes needed to properly manage new and existing ground water data.

Table 3

STATE WATER COMMISSION
ESTIMATED UIC STAFFING REQUIREMENTS

	Objective	Man Years (Annual)	Fiscal 82	Fiscal 83
1.	Central Data Processing	Computer Time	25,000	15,000
2.	Data Management			
	Hydrologist	.3	9,000	6,000
	Technician	.1	2,500	2,000
3.	Permit Processing			
	Hydrologist	.1	3,500	2,500
		.5	40,000	25,500