Bill as Introduced

1/13/00 2043s

SB 181 -FN – AS AMENDED BY THE SENATE

1999 SESSION

99-0470
10/09

SENATE BILL *181-FN*

AN ACT relative to the licensure of geologists.

SPONSORS: Sen. Cohen, Dist 24; Sen. Roberge, Dist 9; Rep. Wendelboe, Belk 2

COMMITTEE: Executive Departments and Administration

ANALYSIS

This bill establishes the board of professional geologists and authorizes the regulation of the practice, examination, licensure, and discipline of professional geologists.

Explanation: Matter added to current law appears in ***bold italics.***
Matter removed from current law appears [~~in brackets and struckthrough.~~]
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

Most of the requirements you outlined in your written testimony referred to subjects I consider as wetland science - There is no requirement for discussion Wetland scientists - Do we need this?

Orig
4246h not passed 6-10
4087h Passed 8-7
4307h

99-0470
10/09

STATE OF NEW HAMPSHIRE

In the Year of Our Lord One Thousand Nine Hundred and Ninety-Nine

AN ACT relative to the licensure of geologists.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 Chapter Heading; Professional Geologists Added. Amend the chapter heading preceding RSA 310-A to read as follows:

PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS, PROFESSIONAL GEOLOGISTS AND NATURAL SCIENTISTS

2 Joint Board; Professional Geologists Added. Amend RSA 310-A:1 to read as follows:

310-A:1 Joint Board Established. There shall be a joint board of professional engineers, architects, land surveyors, foresters, ***professional geologists,*** and natural scientists, consisting of each of the members of the board of professional engineers, board of architects, state board of licensure for land surveyors, foresters' board, ***board of professional geologists,*** and the board of natural scientists. The joint board shall meet at least quarterly to carry out its duties established under this chapter.

3 New Subdivision; Professional Geologists. Amend RSA 310-A by inserting after section 117 the following new subdivision:

Professional Geologists

310-A:118 Definitions. In this subdivision:

I. "Board" means the board of professional geologists.

II. "Business organization" means any enterprise, whether corporation, partnership, limited liability company, proprietorship, association, business trust, real estate trust, or other form of organization; organized for gain or profit, carrying on any business activity within the state.

III. "Geology" means the science dealing with the study of the earth, its origin, history, physical features and content; the investigation and interpretation of the earth's constituents including, but not limited to, its rocks, unconsolidated materials, minerals, solids, fluids, and gases, and of the natural and induced processes and forces acting on the earth; the geologic mapping of the earth's constituents and features, and the results of various processes and forces that have acted on the earth; and the geological application of the information derived from such study in the furtherance of the health, safety and welfare of the public and the environment.

IV. "Licensed professional geologist" means a person who, by reason of advanced knowledge of geology and the supporting physical and life sciences, acquired by education and experience, is technically and legally qualified to engage in the practice of geology as defined in this section and

has successfully passed the examination as may be required in this subdivision and who is licensed by the board or otherwise authorized by this subdivision to engage in the practice of the profession of geology.

V. "Practice of the profession of geology" or "practice of geology" means the performance of work defined as geology in this subdivision including, but not limited to researching, investigating, consulting, geological mapping, describing the natural processes that act upon the earth's materials, predicting the probable occurrence of natural resources, predicting and locating natural or man-induced phenomena which may be useful or hazardous to mankind recognizing, determining and evaluating geological factors, and the inspection and performance of geological work and the responsible supervision thereof in furtherance of the health, safety, and welfare of the public and the environment. The term shall not include the application of geologic information in the identification or determination of engineered solutions to protect the health, safety, and welfare of the public and the environment. The term shall not include the practice of engineering, land surveying, architecture, soil science or wetland science for which separate licensure or certification is required.

VI. "Responsible charge of work" means the independent control, supervision and direction of work requiring the use of initiative, skill, and judgment.

310-A:119 Purpose. In order to safeguard life, health, the environment, property, and to promote public welfare, the practice of geology in this state shall be regulated by the board of professional geologists.

310-A:120 Board of Professional Geologists.

I. A board of professional geologists is established to administer the provisions of this subdivision. The board shall consist of 5 persons appointed by the governor and council, 4 of whom shall be professional geologists, and one public member. The public member of the board shall be a person who is not, and never was, a geologist or the spouse of any such person, and who does not have and never has had, a material financial interest in either the provision of geologic services or an activity directly related to geology, including the representation of the board or profession for a fee at any time during the 5 years preceding appointment.

II. Each member of the board shall be a citizen of the United States and a resident of this state. Each member except the public member shall have been a professional geologist for at least 10 years prior to appointment and shall have held a responsible position in charge of such work, which may include the teaching of geology, for at least 5 years prior to appointment. Experience in providing geological services for a fee, or being in responsible charge of geological work, obtained before the expiration of the period described in RSA 310-A:125, II, may count towards the requirements of this section if the member would have been eligible for licensure under RSA 310-A:125, II at the time of the relevant experience.

III. Members shall be appointed for 5-year terms, except that no more than one appointed member's term may expire in any one calendar year. Original appointments for terms of less than 5

years may be made in order to comply with this limitation. No appointed member shall be eligible to serve more than 2 full consecutive terms, provided that for this purpose only a period actually served which exceeds 1/2 of the 5-year term shall be deemed a full term. Upon expiration of a member's term, the member shall serve until a successor is qualified and appointed. The successor's term shall be 5 years from the date of expiration of the predecessor's appointment, regardless of the date of the successor's appointment. Vacancies occurring prior to the expiration of a specific term shall be filled by appointment for the unexpired term. A board member may be removed for cause by the governor and council under RSA 4:1.

IV. Members of the board shall be reimbursed for all actual travel, incidental, and clerical expenses necessarily incurred in carrying out the provisions of this subdivision.

V. The board shall hold at least 3 regular meetings each year and special meetings at such times as it may deem necessary. Notice of all meetings shall be given in such a manner as rules adopted by the board may provide. The board shall biennially elect a chairperson, vice-chairperson, and secretary. Three members shall constitute a quorum.

VI. The board shall keep a record of its proceedings and a register of all applications for licensure, which shall show:

(a) The name, age, and residence of each applicant.

(b) The date of application.

(c) The place of business of such applicant.

(d) The applicant's educational and other qualifications.

(e) Whether or not an examination was required.

(f) Whether the applicant was rejected and the reasons for such rejection.

(g) Whether a license or permit was granted.

(h) The date of the action of the board.

(i) Such other information as may be deemed necessary by the board.

VII. The records of the board shall be prima facie evidence of the proceedings of the board, and a transcript of such records certified by the secretary of the board under seal shall be admissible in evidence with the same force and effect as if the original were produced. Biennially, as of December 31, the board shall submit to the governor a report of the transactions of the preceding biennium, and a complete statement of the receipts and expenditures of the board.

VIII. The secretary of the board shall publish a roster listing the names and places of business of all professional geologists licensed under this subdivision by the board during February of each even-numbered year. Copies of this roster shall be made available upon request to any person so licensed and will be placed on file with the secretary of state, and furnished to the public upon request at a fee to be established by the board. The board may include in such roster any other information it deems appropriate.

310-A:121 Rulemaking; Fees.

I. The board shall adopt rules, pursuant to RSA 541-A, relative to:

(a) The application procedure for a license to practice under this subdivision;

(b) The qualifications of applicants in accordance with applicable statutes, and the ethical standards required for licensure;

(c) The examination procedures in accordance with applicable statutes, including the time and place of the examination;

(d) License renewal, including any requirements for continuing education;

(e) Ethical and professional standards required to be met by each holder of a license under this subdivision and how disciplinary actions by the board shall be implemented for violations of these standards;

(f) Procedures for the conduct of hearings consistent with the requirements of due process;

(g) The design of an official seal;

(h) Application procedures for and issuance of geology certificates for business organizations;

(i) What constitutes geology experience for the purposes of RSA 310-A:125;

(j) Procedures for a waiver of the fundamentals of geology examination under RSA 310-A:129

(k) The circumstances under which an applicant may be required to take an examination under RSA 310-A:129, IV;

(l) Interstate licensure and temporary permits under RSA 310-A:131;

(m) Waiver of renewal fees for professional geologist 70 years of age or older under RSA 310-A:132, III.

(n) Other matters necessary for the proper administration of this subdivision.

II. The board shall adopt rules under RSA 541-A which shall establish all fees required under this subdivision including the following:

(a) Examinations.

(b) Application for licensure upon passing the examination.

(c) Application for a certificate, temporary permit, or license under RSA 310-A:134.

(d) Biennial renewal for licensed professional geologists.

(e) Late reinstatement for a late renewal of license.

(f) Replacement of lost or mutilated license.

(g) Transcribing and transferring records and other services.

III. The fees established by the board shall be sufficient to produce estimated revenues equal to 125 percent of the direct operating expenses of the board for the previous fiscal year.

310-A:122 Immunity From Civil Liability. No action or other legal proceedings for damages shall be instituted against the board or any member or employee of the board for any act done in good faith or for any neglect or default in the performance or exercise in good faith of any such duty or power.

310-A:123 Receipts and Disbursements. There shall be a board secretary who shall receive and account for all moneys derived under the provisions of this subdivision and shall pay the same to the state treasurer. The board may employ such investigators, clerical, and other assistants as are necessary for the proper performance of its work and may make expenditures for any purpose which is reasonably necessary for the proper performance of its duties under this subdivision, including the reasonable expenses of the board's delegate to meetings and membership dues. The board may, with the approval of the attorney general, hire counsel and investigators and pay the reasonable expenses of such counsel and investigators for the investigation and prosecution of any violation of this subdivision. Such compensation and reasonable expenses shall be paid from the funds of the board.

310-A:124 Licensure No person shall practice professional geology or represent oneself as a professional geologist who is not licensed by the board or whose license expired, or was canceled, suspended or revoked, except as otherwise provided in this subdivision. Licensure to practice geology shall not be required until after the one-year period set forth in RSA 310-A:125, II has ended.

310-A:125 Requirements for Licensure as a Professional Geologist.

I.(a) Applicants for licensure as a professional geologist shall meet the ethical standards set forth in this subdivision and shall have committed no misconduct as set forth in RSA 310-A:133, II. In addition, each applicant shall have a bachelor's degree in geology or a bachelor's degree in a related field which included 30 credit hours or 45 quarter hours in geology from an accredited 4-year college, or a master's or doctoral degree from an accredited graduate program in geology, including but not limited to degrees or credit hours in geochemistry, geohydrology, geomorphology, geophysics, groundwater geology, hydrogeology, hydrology, marine geology, mineralogy, mining geology, paleontology, petrography/petrology, sedimentology/stratigraphy/historical geology, or water resources studies; and shall present evidence suitable to the board of at least 5 years of experience in the practice of geology, of which at least 3 years must have been under the supervision of a licensed professional geologist or a geologist who otherwise meets the requirements of a licensed professional geologist as determined by the board. Applicants meeting these ethics, education and experience requirements shall be eligible to sit for an examination to be administered by the board. Unless otherwise provided, applicants shall take the examination and receive a passing score.

(b) Experience in the practice of geology, obtained before the expiration of the period described in paragraph II of this section, may count towards the experience in the practice of geology under the supervision of a professional geologist required in subparagraph I(a) of this section if the supervising geologist met the education and experience qualifications of paragraph II at the time of the relevant experience. For purposes of this section, experience in the practice of geology does not include routine sampling, laboratory work or geological drafting.

(c) A completed academic year of graduate study in geology may be applied either towards a year of the experience requirement of this section up to a total maximum of 2 years, or to the education requirement of this section, but not both.

(d) A completed academic year of college or graduate level teaching in geology may be applied towards a year of the experience requirement of this section.

II. Following the effective date of the initial adoption by the board of rules under RSA 541-A, the board may issue licenses without examination to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rules and who either meet the education and experience requirements of subparagraph I(a) of this section, or who provide evidence satisfactory to the board of knowledge and experience equivalent to such requirements.

III. Whenever information presented in an application for licensure or renewal is determined by the board to be incomplete or insufficient, the board may require additional information as necessary to determine if the application requirements of this section have been met.

310-A:126 Ethical Standards. No person shall be eligible for licensure as a professional geologist who does not meet the ethical standards of the profession as set forth in the Code of Ethics of the American Institute of Professional Geologists, or other standards adopted by the board.

310-A:127 Continuing Education. Evidence satisfactory to the board of the completion in each biennial renewal period of a minimum of 24 hours of continuing education shall be required for license renewal. The board shall identify the types of educational courses and activities that would further the professional competence of licensees. In general, the continuing education credits shall be determined on the basis of one credit for each contact hour of course instruction or professional development activity actually attended by a licensee.

I. Applications for licensure shall be on forms prescribed and furnished by the board, shall contain statements made under oath, showing the applicant's education and a detailed summary of the applicant's technical work, and shall contain not less than 5 references, of whom at least 3 shall be professional geologists having personal knowledge of the applicant's professional experience.

II. References relating to experience in the practice of geology performed prior to the effective date of this subdivision may be provided by either a professional geologist or a person determined by the board to be of equivalent ethical standards, education and experience who may or may not have been licensed.

III. If the board denies the issuance of a license or a temporary permit to any applicant, any initial fee deposited shall be retained as an application fee.

310-A:129 Examinations. Written technical examinations in geology shall be held at least annually at such times and places as the board shall determine. The scope of the technical and professional examination and the methods of procedure shall be prescribed by the board. A candidate failing an examination may apply for reexamination upon payment of an additional fee determined by the board

and shall be reexamined on the next regularly scheduled examination date. A candidate failing the examination 3 consecutive times shall be required to furnish evidence of additional experience, study, or education credits acceptable to the board before being allowed to proceed with the examination.

310-A:130 Certificates; Seals. The board shall issue a license, upon payment of the licensing fee established by the board, to any applicant who has satisfactorily met all the requirements of this subdivision. Licenses shall show the full name of the licensee, have a serial number, and be signed by the chairperson and the secretary of the board under seal of the board. The issuance of a license by the board shall be prima facie evidence that the person named in the license is entitled to all the rights and privileges of a licensed professional geologist while the license remains valid. Each licensee shall upon licensure obtain a seal of the design authorized by the board, bearing the registrant's name and the legend, "Licensed Professional Geologist." All papers or documents involving the practice of geology under this subdivision, when issued or filed for public record, shall be dated and bear the signature and seal of the licensed professional geologist who prepared or had responsibility for and approved them.

310-A:131 Interstate Licensure; Temporary Permit.

I. Applicants who are licensed, certified, or registered in another state, provided the other state's licensing, certification, or registration requirements are substantially equivalent to or more stringent than those of this state, may be granted a license without examination upon application to the board, submission of a copy of such license, certification or registration, payment of an application fee, and submission of evidence suitable to the board of good professional standing in the other state.

II. A person having no established place of business in this state who wishes to practice or to offer to practice geology in this state may make application to the board for a temporary permit. A temporary permit may be issued which is limited to practice on a specific project in this state for a period not to exceed an aggregate of 30 days in any calendar year, provided such person is a licensed professional geologist in a state or country where the requirements and qualifications for obtaining a certificate of licensure are substantially equivalent to or more stringent than those specified in this subdivision.

310-A:132 License Expiration and Renewals.

I. All licenses issued by the board shall expire on the last day of the licensee's month of birth the second year following the year of issuance, or upon such other biennial date as the board may adopt. The board shall cause notification of the impending license expiration to be sent to each licensee at least one month prior to the expiration of the license, along with a request for payment of a renewal fee. Licensees in good standing may renew their licenses by paying the renewal fee prior to the expiration date of the license, and by presenting evidence satisfactory to the board of completion of the continuing education requirements. If properly renewed, a license shall remain in effect continuously from the date of issuance, unless suspended or revoked by the board for just cause.

II. Failure to remit the renewal fee when due shall automatically suspend the license. A person whose license is canceled for such failure may reinstate the license by paying, within one year of suspension, all fees due, plus a late fee as established by the board.

III. If a professional geologist is 70 years or older at the time the renewal fee first becomes due, and the professional geologist has held a professional geologist license continuously for the 10-year period immediately preceding the renewal, the board may waive the reinstatement fee in accordance with rules adopted by the board.

IV. If the renewal fee is not submitted within one year of the expiration date, an application for reinstatement shall be required and approved by the board to reinstate the license.

310-A:133 Investigations and Disciplinary Proceedings.

I. The board may undertake investigations or disciplinary proceedings:

(a) Upon its own initiative; or

(b) Upon complaint of any person which charges that a person licensed by the board has committed misconduct under paragraphs II or III and which specifies the grounds therefor.

II. A finding by the board of any of the following types of misconduct will be grounds for the revocation of a license:

(a) The practice of fraud or deceit in procuring or attempting to procure or renew a license to practice under this subdivision;

(b) Conviction of a felony or any offense involving moral turpitude;

(c) Unfitness or incompetency by reason of negligent habits or other causes, or negligent or willful acts performed in a manner inconsistent with the interests of persons relying on the expertise of the licensee;

(d) Addiction to the use of alcohol or other habit-forming drugs to a degree which renders the licensee unfit to practice under this subdivision;

(e) Mental or physical incompetency to practice under this subdivision;

(f) Willful or repeated violation of the provisions of this subdivision;

(g) Providing false testimony before the board; or

(h) Knowingly making or signing any false statement, certificate, or affidavit in connection with the practice of geology.

III. A finding by the board of any of the following types of misconduct may be sufficient to support revocation or suspension of a license:

(a) Unprofessional, unethical, or dishonorable conduct unworthy of, and affecting the practice of geology;

(b) Suspension or revocation of a license, similar to one issued under this subdivision, in another jurisdiction and not reinstated;

(c) Violations of the rules of the ethical standards of the profession; or,

(d) Failure to provide, within 30 calendar days of receipt of notice by certified mail, return receipt requested, information requested by the board as a result of any formal complaint to the board alleging a violation of this subdivision.

310-A:134 Investigations; Enforcement.

I. Any employee of the board engaged in making any investigation shall have the power to administer oaths to, and take depositions of, persons pertaining to any investigation. All files of an investigation in progress shall be confidential and exempt from the provisions of RSA 91-A.

II. The superior court, upon application by the attorney general, shall have jurisdiction to issue such person an order requiring such person to appear before the board, its members or agents, and to produce evidence, if so ordered, or to give testimony. Any failure to obey such order of the court may be punishable by the court as contempt.

III. The board is hereby authorized to apply through the attorney general for relief by injunction to the superior court, to enforce the provisions of this subdivision or to restrain any violation of the provisions of this subdivision. In such proceedings, it shall be unnecessary to allege or to prove that either an adequate remedy at law does not exist or that substantial or irreparable damage would result from any continued violation. The members of the board shall not be personally liable under these proceedings.

IV. The actions by the board shall be binding upon applicants for licensure and all persons licensed under this subdivision, and shall be applicable to any business organization which shall hold a certificate or registration under this subdivision.

V. Following an investigation of any complaint relating to a violation of any provision of this subdivision by a nonregistrant, and dependent on the result of such investigation, the board may present its findings to the attorney general, who shall enforce the provisions of this subdivision.

310-A:135 Hearings; Appeals; Penalties.

I. The board shall take no disciplinary action without a hearing. At least 14 days prior to hearing, all parties to a disciplinary proceeding shall be served, either personally or by certified mail, return receipt requested, with a written copy of the complaint filed and notice of the time and place for hearing. All complaints shall be objectively received and appropriately pursued by the board. Written complaints received by the board shall be acknowledged within 3 months of the date of notice to the board. Written notice of all disciplinary decisions made by the board shall be given to both parties to the proceeding upon their issuance.

II. The attorney general, or a designee, shall act as legal advisor to the board if the board so requests, and render such legal assistance as deemed necessary by the board in carrying out the provisions of this subdivision. With the approval of the attorney general, the board may employ counsel and necessary assistance in carrying out the provisions of this subdivision. Reasonable compensation and expenses for counsel and legal assistance shall be paid from the funds of the board allocated for such purpose.

III. At any hearing, the named person or licensee shall have the right to:

(a) Appear in person, by counsel, or both.

(b) Produce evidence and witnesses.

(c) Cross-examine witnesses.

IV. If the named person fails or refuses to appear, the board may proceed to hear and determine the validity of the charges.

V. If, after such hearing, the board finds that a violation has occurred, the board may:

(a) Reprimand, suspend, refuse to renew, or revoke any license or authorization to practice granted under this subdivision.

(b) Require a person to participate in a program of continuing education in the area or areas in which the person has been found deficient.

(c) Require a person to practice under direct supervision of a licensed professional geologist for a period of time specified by the board.

(d) Levy civil penalties for violations.

VI. Any applicant or licensee aggrieved by an action of the board denying, suspending, refusing to renew, or revoking its license may appeal the decision in accordance with RSA 541.

VII. Any disciplinary action by the board shall be published in the report of the board and shall be a public record in accordance with RSA 91-A.

310-A:136 Reissuance of Licenses. The board, for reasons it deems sufficient, may reissue a license to any person whose license has been revoked for more than one year, or suspended, provided 3 or more members of the board vote in favor of such reissuance.

310-A:137 Violations. The remedies and procedures provided in this subdivision are in addition to and not in substitution for other available remedies, procedures, or penalties.

310-A:138 Restraint of Violations. The superior court shall have jurisdiction in equity to restrain violations of RSA 310-A:124 on proceedings brought by the attorney general.

310-A:139 Exemptions; Practice of Professional Engineering.

I. Nothing in this subdivision shall be construed to prevent or affect:

(a) The practice of officers and employees of the government of the United states or the state while engaged within this state in the practice of geology for the federal government or the state.

(b) Work customarily performed by archeologists, chemists, geographers, or oceanographers, providing such work does not include the design and execution of geological investigation, being in responsible charge of geological work, or the drawing of geological conclusions and recommendations.

(c) The practice of engineering by a licensed engineer, the practice of architecture by a licensed architect, the practice of forestry by a licensed forester, the practice of land surveying by a

licensed land surveyor, the practice of soil science by a certified soil scientist, or the practice of wetland science by a certified wetland scientist.

(d) The practice of geology by any person under the direct supervision and control of a professional geologist, provided such work does not include being in responsible charge of final geological reports or decisions.

(e) The practice of geology by any person in the employ of academic or research institutions, agencies of federal or state government, and not-for-profit research institutions.

II. Professional engineers, when engaged in the lawful practice of professional engineering under RSA 310-A, shall not be precluded from performing work which is defined in this subdivision as within the practice of the profession of geology, nor by a requirement that such work be performed by a professional geologist.

4 Effective Date. This act shall take effect upon its passage.

LBAO
99-0470
2/8/99

SB 181-FN - FISCAL NOTE

AN ACT relative to licensure of geologists.

FISCAL IMPACT:

The Joint Board indicates state general fund revenue will increase by $62,000 in FY 2000, by $51,974 in FY 2001, by $54,572 in FY 2002 and by $57,301 in FY 2003. State general fund expenditures will increase by $49,599 in FY 2000, by $41,579 in FY 2001, by $43,658 in FY 2002 and by $45,841 in FY 2003. There is no impact on county and local revenue or expenditures.

METHODOLOGY:

The Board estimates the cost to establish the Board of Professional Geologists as follows:

Licensure Clerk, Labor Grade 10	$18,778
Benefits	5,821
Office Rent, Supplies, Postage, etc.	15,000
Subtotal	$39,599
Furniture & Computer (one-time)	10,000
Total	$49,599
Revenue at 125% of Total Expenditures	$62,000

300 in NH may license 200-250 plus some out of states

Probably 200 or so more

The Board assumes expenditures will increase by 5% annually after FY 2000.

The Board is unable to pre-determine how many new licensees will result and actual expenditures may differ from estimated.

Amendments

Rep. Landers, Coos 2
April 6, 2000
2000-4038h
10/01

Amendment to SB 181-FN

Amend RSA 310-A:121, I as inserted by section 3 of the bill by replacing it with the following:

I. The board shall adopt rules, pursuant to RSA 541-A, relative to:

(a) The application procedure for a license to practice under this subdivision;

(b) The qualifications of applicants in accordance with applicable statutes, and the ethical standards required for licensure;

(c) The examination procedures in accordance with applicable statutes, including the time and place of the examination;

(d) License renewal, including requirements for continuing education;

(e) Ethical and professional standards required to be met by each holder of a license under this subdivision and how disciplinary actions by the board shall be implemented for violations of these standards;

(f) Procedures for the conduct of hearings consistent with the requirements of due process;

(g) The design of an official seal;

(h) What constitutes geology experience for the purposes of RSA 310-A:125;

(i) Procedures for a waiver of the fundamentals of geology examination under RSA 310-A:129

(j) The circumstances under which an applicant may be required to take an examination under RSA 310-A:129, IV;

(k) Interstate licensure and temporary permits under RSA 310-A:131;

(l) Waiver of renewal fees for professional geologist 70 years of age or older under RSA 310-A:132, III.

Amend RSA 310-A:130 as inserted by section 3 of the bill by replacing it with the following:

310-A:130 Certificates; Seals. The board shall issue a license, upon payment of the licensing fee established by the board, to any applicant who has satisfactorily met all the requirements of this subdivision. Licenses shall show the full name of the licensee, have a serial number, and be signed by the chairperson and the secretary of the board under seal of the board. The issuance of a license by the board shall be prima facie evidence that the person named in the license is entitled to all the rights and privileges of a licensed professional geologist while the license remains valid. Each licensee shall upon licensure obtain a seal of the design authorized by the board, bearing the registrant's name and the

legend, "Licensed Professional Geologist." All papers or documents involving the practice of geology affecting public health, safety, and welfare, under this subdivision, when issued or filed for public record, shall be dated and bear the signature and seal of the licensed professional geologist who prepared or had responsibility for and approved them.

Amend RSA 310-A:132 as inserted by section 3 of the bill by replacing it with the following:

310-A:132 License Expiration and Renewals.

I. All licenses issued by the board shall expire on the last day of the licensee's month of birth the second year following the year of issuance, or upon such other biennial date as the board may adopt. The board shall cause notification of the impending license expiration to be sent to each licensee at least one month prior to the expiration of the license, along with a request for payment of a renewal fee. Licensees in good standing may renew their licenses by paying the renewal fee prior to the expiration date of the license, and by presenting evidence satisfactory to the board of completion of the continuing education requirements. If properly renewed, a license shall remain in effect continuously from the date of issuance, unless suspended or revoked by the board for just cause.

II. Failure to remit the renewal fee when due shall automatically suspend the license. A person whose license is canceled for such failure may reinstate the license by paying, within one year of suspension, all fees due, plus a late fee as established by the board.

III. If the renewal fee is not submitted within one year of the expiration date, an application for reinstatement shall be required and approved by the board to reinstate the license.

Amend RSA 310A:134, I as inserted by section 3 of the bill by replacing it with the following:

I. Any employee of the board engaged in making any investigation shall have the power to administer oaths to persons pertaining to any investigation. All files of an investigation in progress shall be confidential and exempt from the provisions of RSA 91-A.

Amend RSA 310A:139, I(a) as inserted by section 3 of the bill by replacing it with the following:

(a) The practice of officers and employees of the government of the United States or the state while engaged within this state in the practice of geology for the federal government or the state.

Amend the bill by replacing section 4 with the following:

4 Effective Date. This act shall take effect 60 days after its passage.

House Executive Departments and Administration
April 11, 2000
2000-4087h
10/04

Amendment to SB 181-FN

Amend RSA 310-A:121, I as inserted by section 3 of the bill by replacing it with the following:

I. The board shall adopt rules, pursuant to RSA 541-A, relative to:

(a) The application procedure for a license to practice under this subdivision;

(b) The qualifications of applicants in accordance with applicable statutes, and the ethical standards required for licensure;

(c) The examination procedures in accordance with applicable statutes, including the time and place of the examination;

(d) License renewal, including requirements for continuing education;

(e) Ethical and professional standards required to be met by each holder of a license under this subdivision and how disciplinary actions by the board shall be implemented for violations of these standards;

(f) Procedures for the conduct of hearings consistent with the requirements of due process;

(g) The design of an official seal;

(h) What constitutes geology experience for the purposes of RSA 310-A:125;

(i) Procedures for a waiver of the fundamentals of geology examination under RSA 310-A:129

(j) The circumstances under which an applicant may be required to take an examination under RSA 310-A:129, IV;

(k) Interstate licensure and temporary permits under RSA 310-A:131;

Amend RSA 310-A:130 as inserted by section 3 of the bill by replacing it with the following:

310-A:130 Certificates; Seals. The board shall issue a license, upon payment of the licensing fee established by the board, to any applicant who has satisfactorily met all the requirements of this subdivision. Licenses shall show the full name of the licensee, have a serial number, and be signed by the chairperson and the secretary of the board under seal of the board. The issuance of a license by the board shall be prima facie evidence that the person named in the license is entitled to all the rights and privileges of a licensed professional geologist while the license remains valid. Each licensee shall upon licensure obtain a seal of the design authorized by the board, bearing the registrant's name and the legend, "Licensed Professional Geologist." All papers or documents involving the practice of geology affecting public health, safety, and welfare, under this subdivision, when issued or filed for public

record, shall be dated and bear the signature and seal of the licensed professional geologist who prepared or had responsibility for and approved them.

Amend RSA 310-A:132 as inserted by section 3 of the bill by replacing it with the following:

310-A:132 License Expiration and Renewals.

I. All licenses issued by the board shall expire on the last day of the licensee's month of birth the second year following the year of issuance, or upon such other biennial date as the board may adopt. The board shall cause notification of the impending license expiration to be sent to each licensee at least one month prior to the expiration of the license, along with a request for payment of a renewal fee. Licensees in good standing may renew their licenses by paying the renewal fee prior to the expiration date of the license, and by presenting evidence satisfactory to the board of completion of the continuing education requirements. If properly renewed, a license shall remain in effect continuously from the date of issuance, unless suspended or revoked by the board for just cause.

II. Failure to remit the renewal fee when due shall automatically suspend the license. A person whose license is canceled for such failure may reinstate the license by paying, within one year of suspension, all fees due, plus a late fee as established by the board.

III. If the renewal fee is not submitted within one year of the expiration date, an application for reinstatement shall be required and approved by the board to reinstate the license.

Amend RSA 310-A:134, I as inserted by section 3 of the bill by replacing it with the following:

I. Any employee of the board engaged in making any investigation shall have the power to administer oaths to persons pertaining to any investigation. All files of an investigation in progress shall be confidential and exempt from the provisions of RSA 91-A.

Amend RSA 310-A:139, I(a) as inserted by section 3 of the bill by replacing it with the following:

(a) The practice of officers and employees of the government of the United States or the state while engaged within this state in the practice of geology for the federal government or the state.

Amend the bill by replacing section 4 with the following:

4 Effective Date. This act shall take effect 60 days after its passage.

Rep. Virtue, Merr. 9
April 26, 2000
2000-4246h
10/04

Amendment to SB 181-FN

Amend RSA 310-A:125, I and II as inserted by section 3 of the bill by replacing it with the following:

I.(a) Applicants for licensure as a professional geologist shall meet the ethical standards set forth in this subdivision and shall have committed no misconduct as set forth in RSA 310-A:133, II. In addition, each applicant shall have a bachelor's degree in geology or a bachelor's degree in a related field which included 30 credit hours or 45 quarter hours in geology from an accredited 4-year college, or a master's or doctoral degree from an accredited graduate program in geology, including but not limited to degrees or credit hours in geochemistry, geohydrology, geomorphology, geophysics, groundwater geology, hydrogeology, hydrology, marine geology, mineralogy, mining geology, paleontology, petrography/petrology, sedimentology/stratigraphy/historical geology, or water resources studies; and shall present evidence suitable to the board of at least 5 years of experience in the practice of geology, of which at least 3 years must have been under the supervision of a licensed professional geologist or a geologist who otherwise meets the requirements of a licensed professional geologist as determined by the board. Applicants meeting these ethics, education and experience requirements shall be eligible to sit for an examination to be administered by the board. Unless otherwise provided, applicants shall take the examination and receive a passing score.

(b) A completed academic year of graduate study in geology may be applied either towards a year of the experience requirement of this section up to a total maximum of 2 years, or to the education requirement of this section, but not both.

(c) A completed academic year of college or graduate level teaching in geology may be applied towards a year of the experience requirement of this section.

II. Following the effective date of the initial adoption by the board of rules under RSA 541-A, the board may issue licenses without examination to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rules and who either:

(a) Meet the education and experience requirements of subparagraph I(a) of this section; or

(b) Provide evidence satisfactory to the board of engagement in the practice of geology for 2 years prior to the effective date of this chapter with the performance of work of a character acceptable to the board and who was a resident of this state for 2 years prior to the effective date of this chapter.

House Executive Departments and Administration
May 2, 2000
20000-4300h
10/09

Amendment to SB 181-FN

Amend RSA 310-A:121, I as inserted by section 3 of the bill by replacing it with the following:

I. The board shall adopt rules, pursuant to RSA 541-A, relative to:

(a) The application procedure for a license to practice under this subdivision;

(b) The qualifications of applicants in accordance with applicable statutes, and the ethical standards required for licensure;

(c) The examination procedures in accordance with applicable statutes, including the time and place of the examination;

(d) License renewal, including requirements for continuing education;

(e) Ethical and professional standards required to be met by each holder of a license under this subdivision and how disciplinary actions by the board shall be implemented for violations of these standards;

(f) Procedures for the conduct of hearings consistent with the requirements of due process;

(g) The design of an official seal;

(h) What constitutes geology experience for the purposes of RSA 310-A:125;

(i) Procedures for a waiver of the fundamentals of geology examination under RSA 310-A:129; and

(j) Interstate licensure and temporary permits under RSA 310-A:131.

House Executive Departments and Administration
May 2, 2000
2000-4307h
10/09

Amendment to SB 181-FN

Amend RSA 310-A:121, I as inserted by section 3 of the bill by replacing it with the following:

I. The board shall adopt rules, pursuant to RSA 541-A, relative to:

(a) The application procedure for a license to practice under this subdivision;

(b) The qualifications of applicants in accordance with applicable statutes, and the ethical standards required for licensure;

(c) The examination procedures in accordance with applicable statutes, including the time and place of the examination;

(d) License renewal, including requirements for continuing education;

(e) Ethical and professional standards required to be met by each holder of a license under this subdivision and how disciplinary actions by the board shall be implemented for violations of these standards;

(f) Procedures for the conduct of hearings consistent with the requirements of due process;

(g) The design of an official seal;

(h) What constitutes geology experience for the purposes of RSA 310-A:125;

(i) Procedures for a waiver of the fundamentals of geology examination under RSA 310-A:129; and

(j) Interstate licensure and temporary permits under RSA 310-A:131.

Amend RSA 310-A:125, I and II as inserted by section 3 of the bill by replacing them with the following:

I.(a) Applicants for licensure as a professional geologist shall meet the ethical standards set forth in this subdivision and shall have committed no misconduct as set forth in RSA 310-A:133, II. In addition, each applicant shall have a bachelor's degree in geology or a bachelor's degree in a related field which included 30 credit hours or 45 quarter hours in geology from an accredited 4-year college, or a master's or doctoral degree from an accredited graduate program in geology, including but not limited to degrees or credit hours in geochemistry, geohydrology, geomorphology, geophysics, groundwater geology, hydrogeology, hydrology, marine geology, mineralogy, mining geology, paleontology, petrography/petrology, sedimentology/stratigraphy/historical geology, or water resources studies; and shall present evidence suitable to the board of at least 5 years of experience in the practice of geology, of which at least 3 years must have been under the supervision of a licensed

professional geologist or a geologist who otherwise meets the requirements of a licensed professional geologist as determined by the board. Applicants meeting these ethics, education and experience requirements shall be eligible to sit for an examination to be administered by the board. Unless otherwise provided, applicants shall take the examination and receive a passing score.

(b) For purposes of this section, experience in the practice of geology does not include routine sampling, laboratory work or geological drafting.

(c) A completed academic year of graduate study in geology may be applied either towards a year of the experience requirement of this section up to a total maximum of 2 years, or to the education requirement of this section, but not both.

(d) A completed academic year of college or graduate level teaching in geology may be applied towards a year of the experience requirement of this section.

II. Following the effective date of the initial adoption by the board of rules under RSA 541-A, the board may issue licenses:

(a) Without examination to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rules and who either meet the education and experience requirements of subparagraph I(a) of this section, or who provide evidence satisfactory to the board of knowledge and experience equivalent to such requirements.

(b) Upon payment of fees, successful examination, and compliance with other requirements of this chapter to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rule and who meet the education and ethical requirements of subparagraph I(a) and are engaged in the practice of geology as of the effective date of this act, but who do not meet the 5-year experience requirement.

Amend RSA 310-A:130 as inserted by section 3 of the bill by replacing it with the following:

310-A:130 Certificates; Seals. The board shall issue a license, upon payment of the licensing fee established by the board, to any applicant who has satisfactorily met all the requirements of this subdivision. Licenses shall show the full name of the licensee, have a serial number, and be signed by the chairperson and the secretary of the board under seal of the board. The issuance of a license by the board shall be prima facie evidence that the person named in the license is entitled to all the rights and privileges of a licensed professional geologist while the license remains valid. Each licensee shall upon licensure obtain a seal of the design authorized by the board, bearing the registrant's name and the legend, "Licensed Professional Geologist." All papers or documents involving the practice of geology affecting public health, safety, and welfare, under this subdivision, when issued or filed for public record, shall be dated and bear the signature and seal of the licensed professional geologist who prepared or had responsibility for and approved them.

Amend RSA 310-A:132 as inserted by section 3 of the bill by replacing it with the following:

310-A:132 License Expiration and Renewals.

I. All licenses issued by the board shall expire on the last day of the licensee's month of birth the second year following the year of issuance, or upon such other biennial date as the board may adopt. The board shall cause notification of the impending license expiration to be sent to each licensee at least one month prior to the expiration of the license, along with a request for payment of a renewal fee. Licensees in good standing may renew their licenses by paying the renewal fee prior to the expiration date of the license, and by presenting evidence satisfactory to the board of completion of the continuing education requirements. If properly renewed, a license shall remain in effect continuously from the date of issuance, unless suspended or revoked by the board for just cause.

II. Failure to remit the renewal fee when due shall automatically suspend the license. A person whose license is canceled for such failure may reinstate the license by paying, within one year of suspension, all fees due, plus a late fee as established by the board.

III. If the renewal fee is not submitted within one year of the expiration date, an application for reinstatement shall be required and approved by the board to reinstate the license.

Amend RSA 310-A:134, I as inserted by section 3 of the bill by replacing it with the following:

I. Any employee of the board engaged in making any investigation shall have the power to administer oaths to persons pertaining to any investigation. All files of an investigation in progress shall be confidential and exempt from the provisions of RSA 91-A.

Amend RSA 310-A:139, I(a) as inserted by section 3 of the bill by replacing it with the following:

(a) The practice of officers and employees of the government of the United States or the state while engaged within this state in the practice of geology for the federal government or the state.

Amend the bill by replacing section 4 with the following:

4 Effective Date. This act shall take effect 60 days after its passage.

Speakers

SIGN UP SHEET

To Register Opinion If Not Speaking

Bill # SB 181 Date March 8, 2000

Committee EDA

** Please Print All Information **

Name	Address	Phone	Representing	(check one) Pro	Con
Tim Stone	600 State St, Portsmouth, NH	433-1935	Stone Hill Environmental	✓	
Dorothy Richter	8 Industrial Way Salem NH	893-9944	Hager-Richter Geoscience, Inc	✓	
Tony Giunta	3 Lake Shore Dr. Franklin, NH	934-0025	NH Council of Professional Geol.	✓	

Hearing Minutes

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS AND ADMINISTRATION

PUBLIC HEARING ON SB 181-FN

BILL TITLE: relative to the licensure of geologists.

DATE: March 8, 2000

LOB ROOM: 202 **Time Public Hearing Called to Order:** 10:05 AM

Time Adjourned: 11:05 AM

(please circle if present)

Committee Members: Reps. Mercer, Goulet, Dyer, Langer, Holley, B. Moore, Dickinson, Stickney, Sapareto, Hamel, Millham, O'Neil, Poulin, Zolla, Murphy, Reidy, Virtue, Batchelder, Burkush, Courchesne, Landers and Lent.

Bill Sponsors: Sen. Cohen, Dist 24; Sen. Roberge, Dist 9; Rep. Wendelboe, Belk 2

TESTIMONY

* Use asterisk if written testimony and/or amendments are submitted.

Sen. Cohen, sponsor. Introduced the amended bill. Read requirements from bill. Rep. Goulet presented the fact that the normal procedure was to have candidates for new licenses complete a new questionnaire.
Rep. Wendelboe, co-sponsor. Referred back to prior testimony.
*Philip O'Brien, representing Dept. of Env. Serv. 271-2905. Supports bill. Argues about need for protection for the public. Read from notes but was so fast that I was unable to record details. Importance is economically and environmentally.
*Francesca Latawiec, representing Office of State Planning, 271-2155. Supports Bill. Answered a number of questions about the relationship of all the types of engineers. Geological services are now being provided without these licenses.
*Timothy Stone, 595 F. W. Hartford Dr., Portsmouth, 433-1935. Representing NH Council of Professional Geologists. Supports bill. This gentleman read the top page of his testimony. He did not understand what the word "subdivision" referred to. There were numerous questions. Number of geologists in NH was 300 or more. Expect within 200 – 250 licensed and an additional number from out of state.
*William Straub, 35 Bow St., Portsmouth, 431-6196. Representing Consulting Engineers of NH. Supports bill.

Respectfully submitted,

Rep. Ray Langer, Clerk

Testimony

NEW HAMPSHIRE HOUSE OF REPRESENTATIVES
EXECUTIVE DEPARTMENTS AND ADMINISTRATION COMMITTEE

SUNRISE QUESTIONNAIRE

INSTRUCTIONS FOR COMPLETING THIS QUESTIONNAIRE:

Regulation of professions is mandated by the Legislature only for the preservation of the health, safety, and welfare of the public.

This questionnaire is designed to obtain information which will aid the Legislature in determining the need for regulation of your profession and in analyzing proposed legislation seeking to establish regulation. Your cooperation in completing it is greatly appreciated.

Each part of every question must be addressed. If there is no information available to answer the question, please state this as your response and describe what you did to attempt to find information that would answer the question. If you think the question is not applicable, please state this and explain your response.

When supporting information is appropriate, it should be included as an appendix and labeled accordingly. References within the main document to information contained in the appendixes should be properly labeled.

Please read the entire questionnaire before answering any questions so that you will understand what information is being requested and how questions relate to each other.

QUESTIONNAIRE

Questions shown in bold face. Responses follow in normal face.

Section A. - Legislative History

1. What is the history of regulation or attempts at regulation of this group? For example, has this profession ever been regulated and subsequently deregulated? Has legislation requiring regulation been filed in the past? Has legislation requiring regulation passed and been vetoed? Please explain why the regulation was sunset, why bills did not pass or why legislation was vetoed.

SB181, a bill to license professional geologists, was introduced in February, 1999. See attached copy of bill's docket (Exhibit 1). It was re-referred in March, 1999 by the Senate ED&A Committee. A process that brought engineers and other potentially affected professionals and interested parties together was embarked on to work out the issues in the bill. A consensus was reached in support of an amendment to SB181. The amended bill was passed by the Senate ED&A Committee and the full Senate, unanimously, in February, 2000.

This profession has not been regulated.

There was consideration of legislation to register all "natural scientists" years ago, at the time the Bill regulating soil scientists was passed. Since then, the practice of other natural scientists, i.e., wetlands scientists, has become regulated. In developing the current bill, a concerted effort at reaching out to interested parties has been made, and the bill has earned broad support from the public and private sectors in the engineering and environmental communities. Consensus regarding the bill has been reached with the engineering community, and is documented in a Memorandum of Understanding dated September 20, 1999 (copy included in Exhibit 1). The geological profession has shown support for the legislation as proposed here.

Section B. - Applicant Group Identification

This section of the questionnaire is designed to help identify the group seeking regulation and to determine if the applicant group adequately represents the occupation.

2. What occupational group is seeking regulation? Identify by name, address, phone number, and associational affiliation the individuals who should be contacted when communicating with this group regarding this questionnaire.

The occupational group seeking regulation is professional geologists. Contacts for communicating with this group regarding this questionnaire are:

Dorothy Richter
President, New Hampshire Council of Professional Geologists (NHCPG)
c/o Hager-Richter Geoscience, Inc.
8 Industrial Way - D10
Salem, New Hampshire 03079
Telephone: 603-893-9944

Timothy Stone
Chair, Legislative Committee, NHCPG
c/o StoneHill Environmental, Inc.
600 State Street, Suite 2
Portsmouth, New Hampshire 03083
Telephone: 603-433-1935

3. List all titles currently used by New Hampshire practitioners of this occupation. Estimate the total number of practitioners now in New Hampshire and the number using each title. Document.

Titles currently used by New Hampshire practitioners of this occupation and the number using each title include, but are not necessarily limited to, the following:

Geologist
Professional Geologist
Hydrogeologist
Hydrologist
Earth Scientist
Geophysicist

4. Identify each occupational association or similar organization representing current practitioners in New Hampshire and estimate its membership. Please provide membership lists to document the numbers of people in these associations. List the names of any associated national group.

There are two State-wide occupational associations of geologists in New Hampshire:

New Hampshire Council of Professional Geologists (NHCPG) with approximately 200 individual and corporate members. The 36 corporate member firms of NHCPG include the spectrum of large national firms to small local firms and may be characterized as multi-disciplinary firms, environmental firms, firms primarily known as engineering firms, and geological firms.

New Hampshire Geological Society (NHGS)
with approximately 175 individual members

Membership Lists for NHCPG and NHGS are attached as Exhibit 4. Neither organization is a local chapter of a national association.

5. Estimate the percentage of practitioners who support this request for regulation. Document the source of this estimate.

NHCPG estimates that 99+% of the practitioners in New Hampshire support this regulation. Documentation of that estimate is given by the comparable numbers of members in NHGS and NHCPG, which was formed specifically to support the proposed legislation. NHCPG has received no expressed opposition to the bill from within or outside the geological profession.

6. Name the group or individual representing the practitioners in this effort to seek regulation. How was this group or individual selected?

New Hampshire Council of Professional Geologists is the primary group leading the effort for the proposed legislation.

7. Are all practitioner groups listed in response to questions represented in the organization or by the individual seeking regulation? If not, why not?

Yes. All practitioner groups listed in response to questions are represented in the organization, with the exception of engineering groups, which were represented in the Joint Working Group formed to develop the consensus bill being proposed.

Section C. - <u>Consumer Group Identification</u>

This section is designed to identify consumers who typically seek practitioner services and to identify groups, outside of those seeking regulation, with an interest in the proposed regulation.

8. Do practitioners typically deal with a specific consumer population? Are clients generally individuals or organizations? Document.

Geologists deal with a wide range of consumers: large and small businesses, government agencies, and individuals, such as homeowners with fuel oil spills or leaks. They are "front line" experts whose services are directly obtained by businesses and individuals. In many cases, individual homeowners hire practitioners to assist with contamination problems related to home heating oil spills, USTs, leaking fuel lines, hazardous wastes, or real estate transfers.

9. Identify any advocacy groups representing New Hampshire consumers of this service, e.g., AARP. List also the name of any applicable national advocacy groups.

Advocacy groups representing private sector New Hampshire consumers of this service are:

Consulting Engineers of New Hampshire (CENH), a chapter of the American Consulting Engineers Council. CENH actively participated in a Joint Working Group that met several times in 1999 to review the proposed legislation and to suggest amendments to improve the bill. CENH represents NH consumers of this service in that the CENH member firms commonly subcontract geologic services.

Business & Industry Association (BIA). BIA represents NH business consumers of this service. No advocacy groups exist that represent individuals consumers beyond traditional consumer protection organizations (BBB).

10. Identify the consumer populations not now using practitioner services who will be likely to do so, if regulation is approved.

If regulation is approved, the identity of the consumer population likely will not change, but the quality of the service they receive will improve generally.

11. Name any groups who will oppose this proposed regulation or others with an interest in this proposed regulation. If there are none, indicate efforts made to identify them.

No groups have been identified who express opposition this proposed regulation. No one appeared to oppose the bill during hearings in the NH Senate Executive Departments and Administration Committee. The NHCPG and NHGS have worked closely with several leading engineering organizations through the Joint Working Group discussed above, resulting in a Memorandum of Understanding dated September 20, 1999 (copy in Exhibit 1). CENH has provided testimony to this committee in support of the bill. Letters of support have been received from organizations such as:

NH Association of Natural Scientists
Association of Conservation Commissions
Society for the Preservation of New Hampshire Forests
American Ground Water Trust
NHCPG members have been in contact with many other trade organizations and there is no identified opposition to the Bill.

Section D.

I. <u>The unregulated practice of this occupation will harm or endanger the public health, safety, and welfare.</u>

12. Is there or has there been significant public need and demand for a regulatory standard? Document. If not, what is the basis for seeking regulation?

Yes, there is significant need and demand from State and municipal agencies, businesses, and homeowners for the establishment of a regulatory standard by which the qualifications of a geologist can be judged and the practice of geology regulated. At this time, a person, company or agency requiring the services of a geologist has little basis on which to judge the qualifications of a geologist. The NHDES can provide a list of firms which have requested to be on the list: however, anyone, qualified or not, can be added to the list, and the NHDES makes no representation regarding the qualifications of firms or individuals appearing on the list. A common complaint of homeowners and business owners requiring the services of a qualified geologist is that due to the technical nature of the profession, the consumer does not have the expertise to judge the qualifications of a practitioner who will ultimately be dealing with business issues which impact their health, safety and welfare.

In many cases, the demand from both the private and public sectors for the work of geologists will include reports commonly called Site Investigations (SIs). SIs characterize geologic and hydrogeologic conditions of a site and are commonly required by purchasers and their financial institutions as part of the "due diligence" phase of commercial property transfers and by agencies such as the New Hampshire Department of Environmental Services. These reports typically determine the presence and migration of pollutants and hazardous wastes. When these reports are performed incorrectly, people or the environment are seriously harmed.

The New Hampshire Department of Environmental Services manages a variety of environmental programs that protect public health, safety and welfare. Programs that utilize geologic information range from the clean up of hazardous waste contaminated sites to the protection of drinking water sources. There are over 4000 contaminated sites (including petroleum spills and leaking tanks, hazardous waste sites and landfills) that require accurate geologic investigation and evaluation to produce useful information upon which the Department and other parties make decisions on how to protect the public, clean up contamination and protect nearby water supplies. These decisions are made in the interest of public health, safety and welfare and the protection of the State's natural resources. At a contaminated site a Site Investigation is required to locate and characterize contamination from the spill or release onto or into the ground, of petroleum or hazardous chemicals. Also, selection of location for solid waste landfills is based upon geologic information presented in a Site Investigation. During the preparation of a Site Investigation, a geologist is required to determine the proper location for soil borings, oversee the boring installations, collect, and interpret soil samples in order to determine the proper depth for a well screen. Later, when preparing the Site Investigation Report, the geologist must accurately interpret groundwater, soil, and bedrock data. Currently, there are no professional qualifications and standards for persons performing Site Investigation.

Other state agencies, municipalities and private companies have a need for licensed professionals to perform geologic work that affects public health, safety and welfare. For example , the New Hampshire Department of Transportation frequently retains geologists

to assess subsurface geologic conditions preparatory to upgrading or expanding a roadway. Here also, there is no surety such roadway investigations and accompanying interpretation are of professional quality. Licensure will save these agencies both time and money and assure higher quality investigation, interpretations, and reports.

Additionally, the Department of Environmental Services administers such public funding programs, such as oil reimbursement programs and landfill closure grant, that involve the expenditure of public funds to clean up contaminated sites. For the last two years the Department has worked with and supported the engineering and geologic communities to establish a licensing program for professional geologists.

13. What harm to the public has occurred as a result of the unregulated practice of this profession? What is the nature and severity of the harm? Document the physical, social, intellectual, financial, health, safety, and welfare threat to the consumer if this practice goes unregulated.

The majority of geologists practicing in New Hampshire are providing services associated with the identification and cleanup of soil and groundwater contamination. In such cases, the practice of geology by unqualified persons can result in health, safety, welfare, emotional and/or financial harm to the consumer. The documentation of such harm cannot be readily quantifiable due to the highly technical nature of the field and the fact that the harm is often not readily apparent unti; long after the substandard services have been provided. Additionally, disputes are often handled confidentially with litigation and insurance company involvement.

In the environmental field in which most geologists are practicing in New Hampshire, often times harm is already occurring when the geologist becomes involved, since many scenarios involve the uncontrolled release of oil and hazardous material to the environment. Unfortunately, the investigation and cleanup of these prlblems by unqualified practitioners only exacerbates the real risk of harm. Some examples of where the harm is obvious, include:

- The leak of fuel oil under a Hooksett residence basement, which migrates into the homeowners water supply well, rendering it unusable and threatening several nearby residential wells;
- The identification of nitrates in Merrimack neighborhood water supplies, which pose an acute risk to young children consuming the water;
- The migration of gasoline vapors into a Goffstown elementary school building, which originated from a gasoline release to groundwater;
- The subsurface migration of methane gas from a Hampton landfill into homes which abut the landfill;
- The identification of buried waste oil contaminated soil on a site in Exeter, which was proposed for residential development and use by children;

- ❖ The appearance of oil in the storm drainage system and nearby river, which originated from the historical subsurface release of oil from a yet to be identified source;
- ❖ The installation of a public water supply well in Kingston, in an area known to contain gasoline contaminated groundwater and the subsequent exposure of water users to contaminated groundwater;
- ❖ The improper and poorly documented removal of underground storage tanks in Portsmouth, which results in a gasoline release to groundwater and the necessity for the property owner and the N.H. Petroleum Cleanup Funds to expend additional funds to investigate and cleanup the release.
- ❖ The continued contamination of three public water supply wells in Kingston, with gasoline over twelve (12) years after discovery of the release, due to inadequate initial characterization of the release. Many more cases exist where the harm is not so readily apparent.

The public has also been harmed by the additional expenditure of public money in detailed review and rework necessitated by substandard subsurface characterizations of contaminated sites. Such costs include internal costs of the state employees and direct site costs reimbursed through programs supported by state tax dollars. Homeowners whose water supplies are impacted by incorrect SIs face unknown hazards to the health of themselves and their families.

The failure of Site Investigation reports to scientifically document and accurately interpret geologic, hydrologic, and geochemical data has resulted in incorrect estimations of the extent of soil contamination and groundwater movement at petroleum spill sites, and hazardous waste sites. Such erroneous interpretations have resulted in misidentification or non-identification of private water supply wells within the contaminant pathway, thereby putting the well owner at risk of drinking such contaminants as benzene, MtBE, or trichloroethylene. Inaccurate information has also resulted in safety hazards being unabated and public funding being inefficiently spent because work was not properly performed and risks were inaccurately assessed

Further, it is a standard requirement of lending institutions to require that on the sale of commercial property an accurate assessment of any contamination be performed. This requirement of a due diligence investigation results in a report, prepared by an environmental consultant, after investigation of the building above-ground and potential contamination below-ground. Here also, geologic, hydrologic, and geochemical data are presented and interpreted and recommendations made.

There are no minimum requirements for persons performing site characterization and investigation. The Department of Environmental Services currently requires engineering work at contaminated sites be performed by licensed professional engineers who have to meet and maintain specified standards for education, experience and ethical conduct. The Department supports similar licensing standards for geologists to provide a comparable level of protection of public health, safety and welfare associated with

geologic work. The practice of engineers will not be reduced and is completely protected under this Bill.

14. How likely is it that harm will occur? Cite cases or instances of consumer injury and the estimated number of these injuries. If there are none, how is harm currently avoided?

As indicated by the examples cited in the prevous question, the greatest harm occurs when consumers are exposed to, or threatened by, oil or hazardous materials releases. Significant financial and emotional harm are also common.

The recent history of Site Investigations prepared by unqualified persons which caused harm to occur cannot be precisely determined. However, experience ranges over the entire spectrum from no-harm to not identifying contaminated drinking water supplies, which are continued to be used. Anecdotal evidence from professional geologists and NHDES project managers have reported at least monthly the discovery of sub-standard Site Investigation reports and "due diligence" reports. Follow-up field work can identify contaminated water supplies, but not confirm when the water supplies became contaminated. The type of failure usually encountered is the lack of interpretation of data which would clearly lead to identification of water supplies at risk and therefore not following up with sampling of those water supplies.

In a significant number of instances harm has occurred because the nature, extent and risk of contamination was not accurately characterized or investigated. Many of the persons currently performing geologic work are geologists licensed in other states or professionals licensed in another discipline in New Hampshire (e.g., engineers) and would be eligible for licensing as a professional geologist under the proposed legislation. However, there are also unqualified persons performing geologic investigations and characterizations whose practice is not governed by professional qualifications or standards. In addition to the harm described in the answer to Question 13, consumer injury has occurred when people and companies have purchased real estate based on inaccurate information which has not properly characterized contamination at a parcel of property. While the incidents may be small, the consequence is usually significant to the new owner who assumes the liability to perform the clean up.

15. What are the estimated numbers of complaints against professionals practicing this profession? (Some information may be obtained from the State Attorney General's Office, Consumer Protection Bureau)

The estimated number of complaints against professionals practicing this profession is difficult to determine since most complaints are handled privately through claims against insurance policies of the geologists and/or through civil suits.

The New Hampshire Department of Environmental Services finds ten to twenty Site Investigation reports each year which have incorrect conclusions and conceptual models

because the geologic information was improperly gathered and erroneously interpreted by persons without a geologic education or training. This number of cases alone does not give a true sense of how devastating such errors can be. The agency often finds themselves hand-holding these geologists through the process. However, where the work of these geologists is not given critical review (i.e., due diligence and similar reports) by qualified experts, their clients may be at risk of purchasing a contaminated property or, worse, not immediately responding to a situation where water supplies are at risk.

The proposed legislation both defines the practice of geology which must be done by a professional geologist and establishes standards of accountability. The Board of Geologists establishes a forum for consumers to file complaints against professional practicing geology and procedures to take disciplinary action misconduct has occurred.

16. What provisions of the proposed regulation protect the consumer injury?

The four cornerstones of professional regulation are education, experience, competence, and ethical practice. Section 310-A:125 sets forth requirements for Licensure as a Professional Geologist that address education, experience, competence as shown by passing an examination, and ethical practice. The requirements are comparable to existing legislation in the 26 other states, plus Puerto Rico, where the profession of geology is regulated. The proposed regulation provides protection for consumer injury through the affirmative legal responsibility on professional practitioners. Section 310-A:133 sets forth the procedure for investigation and disciplinary action of alleged misconduct, leading to revocation or suspension of the license to practice geology.

II. <u>Existing protection available to the consumer is insufficient.</u>

17. To what extent do consumers currently control their exposure to risk? How do clients locate and select practitioners?

Consumers, meaning the clients who engage the professional services of geologists, currently have little recourse except legal action, if provided with unsatisfactory services. Our clients generally select practitioners through "word-of-mouth," advertising in business publications, yellow pages and/or by consulting various lists of practitioners available from agencies like DES. Note that inclusion on such lists does not imply competence or high ethical standards. One merely requests inclusion on the list.

18. Are clients frequently referred to practitioners for services? Give examples of referral patterns.

Other professionals involved in a specific project, such as attorneys, engineers, financial institutions, or architects, frequently refer clients to geologic practitioners. For example, in a groundwater contamination case, the client is frequently directed to one (or, perhaps, a short list of) potential geological consultants by another professional. Geologists frequently practice as "front line" professionals in firms where there are no professionals in other disciplines.

19. Are clients frequently referred elsewhere practitioners? Give examples of referral patterns.

Unsure of meaning. A practitioner certainly would refer clients elsewhere if the work is outside the practitioner's field of expertise and the clients' needs are better served by a professional in another field of expertise.

The geologic practitioner may also subcontract portions of the work to other practitioners, such as drilling and excavating contractors, analytical laboratories, engineers, and surveyors.

20. What sources exist to inform consumers of the risk inherent in incompetent practice and of the profession?

There are no formal sources in New Hampshire to inform consumers of incompetent or unethical geologic practitioners. The profession is completely unregulated, and any person may claim to be a professional geologist.

21. What administrative or legal remedies are currently available to redress consumer injury and abuse in this field?

The only recourse now is legal action.

22. Are the currently available remedies insufficient or ineffective? If so, please explain.

Existing methods of remedying or punishing incompetent or unethical geologic practitioners are insufficient and ineffective. Incompetent practitioners can seek employment in this state or can open their own business with no repercussions. Furthermore, this is one of those areas of expertise for which

1. the evidence of incompetence very often will not be readily apparent to the layperson or consumer,
2. the evidence of incompetence might not "appear" for years,
3. the results of the incompetence could produce public health risks,
4. the results of the incompetence could irreparably damage the environment,
5. the results of the incompetence would be costly to prove (if even provable).

Remedies are usually very costly, may be only partly effective, and require oversight by state agencies. In addition, with increasing competition for supplies of water as the population and development of New Hampshire grows, a higher degree or "oversight" is needed to lessen the likelihood of poor geologic guidance and advice.

For example, poor geologic advice could steer planners to make land-use control decisions that could wrongly injure property owners values (by lowering property values of land in wellhead protection areas or aquifer overlay zones due to a reduced land value for business and industry development).

III. No alternatives to regulation will adequately protect the public.

23. Explain why marketplace factors will not be as effective as governmental regulation in ensuring public welfare. Document specific instances in which market controls have broken down or proven ineffective in assuring consumer protection.

As described elsewhere, the profession is unregulated today and any person may assert that he/she is a professional geologist qualified to perform geologic work that may severely and adversely affect public health, safety and welfare. Such representations can be made through advertisements, yellow page listings, listings in directories of consulting services, and by being placed on lists of consultants maintained by state agencies such as the NHDES.

The practice of geology is a highly specialized technical field which, without an education in the field, the average consumer of geologic services has little basis to judge the qualifications of a geologist. Additionally, because the use of such services is not as widespread as general commercial activity, it is difficult for the consumer to obtain information regarding the qualifications of a geologist from neighbors or colleagues. Furthermore there is currently no place a consumer can readily obtain information regarding the qualifications of a geologist. It is also difficult for the consumer to judge the quality of a work product since such products are generally quite technical.

Due to the competitiveness of the environmental field and the absence of regulations pertaining to practicing in the field, market factors actually foster the activities contrary to the public interest. In particular, unqualified individuals can bid or provide price quotes to customers which are well below what is required to properly and competently complete a project with a qualified practitioner. This is clearly a field where the saying "you get what you pay for" holds true; however, in this case a poorly completed job can result in harm or injury to the consumer. Examples of how the current market controls have proven ineffective in assuring consumer protection are provided throughout this questionnaire.

24. Are there other states in which this occupation is regulated? If so, identify the states and indicate the manner in which consumer protection is ensured in those states.

The profession is currently regulated in 26 states plus Puerto Rico:

Alabama	Kentucky	South Carolina
Arizona	Maine	Virginia
Arkansas	Minnesota	Wisconsin
California	Mississippi	Wyoming
Delaware	Missouri	Alaska

Florida	North Carolina	Idaho
Georgia	Oregon	Nebraska
Illinois	Pennsylvania	Tennessee
Kansas	Puerto Rico	Indiana

Legislation for regulation of the profession is pending in New York and other states. Consumer protection in the New Hampshire bill is modeled after the existing legislation in other states.

25. What means other than governmental regulation have been employed in New Hampshire to ensure consumer health, safety, and welfare? Show why the following would be inadequate:

(a)code of ethics
(b)codes of practice enforced by professional associations
(c)dispute-resolution mechanisms such as mediation or arbitration
(d)recourse to current applicable law
(e)regulation of those who employ or supervise practitioners
(f)caveat emptor, i.e., "let the buyer beware"
(g)other measures attempted

(a) code of ethics

A code of ethics cannot be enforced without State regulation of the profession.

(b) codes of practice enforced by professional associations

Several professional organizations have codes of practice, however, not all geologists are members of these organizations and such organizations cannot take disciplinary actions which bear upon the practice of geology in New Hampshire.

(c) dispute-resolution mechanisms such as mediation or arbitration

Such mechanisms are only effective after harm has occurred. The objective of the licensing bill is minimize harm from occurring in the first place.

(d) recourse to current applicable law

There are no provisions for recourse against a practitioner under applicable laws which govern activities performed by geologists. Tort or contract claims may be pursued in the courts. Most laws only allow recourse against the property owner who is the consumer of the questionable services.

(e) regulation of those who employ or supervise practitioners

No regulations exist in New Hampshire that regulate firms practicing in the environmental field or other fields that utilize the services of geologist. Even engineering firms are only regulated while actually practicing engineering, thus excluding a mechanism to regulate the practice of geology. Once again due to the specialized nature of the field it is not reasonable to assume that all employers or

supervisors of a geologist would have the qualifications to knowledgeably judge the how a geologist practices. Additionally many practitioners of geology work independently.

(f) caveat emptor, i.e., "let the buyer beware"

This has always applied to some degree, but obviously does not provide the mechanism to ensure consumer health, safety and welfare. It is far less effective in a specialty like geology, as most consumers do not understand the intricacies of the science.

(g) other measures attempted

Other reasonably implemented measures have not been identified.

26. If a "grandfather" clause (in which current practitioners are exempted from compliance with proposed entry standards) will be allowed, how is that clause justified? What safeguards will be provided to consumers regarding this group?

Applicants wishing to be grandfathered still must meet all of the licensing education and experience requirements with the exception of passing a written exam. In order to provide an adequate pool of professionals to provide the regulated services during initial licensing implementation, grandfathering of properly qualified professionals is typically the mechanism employed and has proven to be successful in other states implementing licensing. The process (as proposed) will be fair and will produce a large pool of licensed professionals. They will then be subject to the standards of the Act, prospectively. This represents a significant benefit to the public.

IV. <u>Regulation will mitigate existing problems</u>.

27. What specific benefits will the public realize if this occupation is regulated? Indicate clearly how the proposed regulation will correct or preclude consumer injury. Do these benefits go beyond freedom from harm? If so, how?

With licensing in place the public will now have a benchmark to judge the qualifications of a geologist. The employment of a licensed geologist will reduce the instances of harm which have been discussed in detail in other parts of this questionnaire. Assuming a reduction in the performance of inadequate or substandard work by unqualified practitioners, there would also be a reduction in costs which could be incurred by the necessity to redo work or the cost of correcting increased damage which occurred as a result of substandard work. Due to the often very personal nature of environmental issues as they impact individuals, particularly in regard to their homes, the reduction in poorly executed projects will result in less lifestyle disruption and mental anguish for the consumer.

28. Which consumers of practitioner services are most in need of protection? Which require least protection? Which consumers will benefit most and least from regulation?

Consumers who require the most protection are homeowners, businesses and local and State regulatory agencies requiring the services of a geologist. Consumers who require the least protection are businesses in related fields which employ geologists and have in house staff with geologic expertise, such as some engineering firms. The same relationship holds true for those who will benefit the most and least from the regulation of geologists.

29. Provide evidence of "net" benefit when the following possible effects of regulation are considered:

(a) restriction of opportunity to practice

The only restriction of the opportunity to practice will be for those who are not qualified to practice, resulting in an overall benefit to the consumer.

(b) restricted supply of practitioners

It is anticipated that due to the mature nature of the field and the subsequent number of geologists which will qualify for licensing, an adequate supply of geologists will be licensed under the grandfather clause.

(c) increased cost of services to consumers

An increase in the cost to consumers is not likely to occur due to the competitive nature of the market and the adequate supply of qualified practitioners.

(d) increased governmental intervention in the marketplace

Most of the work currently performed by geologists that deals with public health, welfare and the environment is currently driven by State regulations. However, with licensing, the practice of unqualified individuals can be minimized or eliminated, resulting in a benefit to the consumer.

V. <u>Practitioners operate independently, making decisions of consequences</u>.

30. To what degree do individual practitioners make professional judgments of consequence? What are these judgments? How frequently do they occur? What art the consequences? Document.

Individual practitioners (geologists) make professional judgements of consequence, specifically those bearing directly on the protection of public health, safety and welfare, as a routine part of professional practice. Specific examples of such activities include (but are not limited to):

Contaminated Site Evaluation - On a routine basis, individual practitioners apply geologic principles to collect and evaluate the information necessary to assess the actual and potential risks to public health and the environment posed by the presence of contaminants in soil, groundwater, sediments, surface water and air. Faulty judgements or poorly developed assessment programs can lead practitioners and the public to underestimate the risks posed by the presence of such contaminants, resulting in the potential for harm to receptors.

Water Supply Identification & Protection - On a routine basis, individual practitioners apply geologic principles to collect and evaluate the information necessary to locate and develop viable sources of groundwater for consumption and other uses. Such practitioners may also be charged with development of water supply protection programs. Faulty interpretations or poorly developed assessment programs may lead to inadequate, harmful, or poor quality water supplies, as well as potential impacts to existing public water supplies.

Geological Hazard Evaluation - On a routine basis, individual practitioners utilize geophysical tools and geologic principles to assess the presence of geologic hazards (faults, voids, unstable soils, etc.), contaminant transport through existing faults and fractures, monitor seismic activity associated with construction sites, and identify buried and/or abandoned sources of contamination (drums, tanks, vaults, etc.). Geologic materials (rock and soil) are evaluated for construction projects (dams, tunnels, critical buildings, etc.) to help assess stability and safety. Faulty judgements or poorly developed assessment programs can lead the public to underestimate the risks of harm to the general public and the environment.

31. To what extent do practitioners work independently, as opposed to working under the auspices of an organization, an employer, or a supervisor?

Practitioners commonly work as independent consultants, or within companies as the sole geological representative to the project team. Geological interpretations and conclusions are often provided by individuals and companies without the benefit of geological peer or supervisory review.

32. To what extent do decisions made by the practitioner require a high degree of skill or knowledge to avoid harm?

Due to the interpretive nature of geological science, the practitioner must be proficient in the application of geological principles and must have years of challenging practical experience. Unidentified risks and faulty interpretations and decisions made by a poorly-trained and/or inexperienced practitioner can lead to an underestimation of potential risk to human health and the environment.

VI. <u>Functions and tasks of the occupation are clearly defined.</u>

33. Does the proposed regulatory scheme define a scope of activity which requires licensure, or merely prevent the use of a designated job title or occupational description without a license? Explain.

The proposed legislation defines "geology," "licensed professional geologist," and "the practice of the profession of geology." The proposed legislation requires licensure to practice the profession of geology, as it pertains to services which involve public health, welfare and the environment.

34. Describe the important functions, tasks, and duties performed by practitioners. Identify the services and/or products.

The proposed legislation defines the practice of the profession of geology as "the performance of work defined as geology in this subdivision including, but not limited to researching, investigating, consulting, geological mapping, describing the natural processes that act upon the earth's materials, predicting the probable occurrence of natural resources, predicting and locating natural or man-induced phenomena which may be useful or hazardous to mankind recognizing, determining and evaluating geological factors, and the inspection and performance of geological work and the responsible supervision thereof in furtherance of the health, safety, and welfare of the public and the environment. The term shall not include the application of geological information in the identification or determination of engineered solutions to protect the health, safety, and welfare of the public and the environment. The term shall not include the practice of engineering, land surveying, architecture, soil science or wetland science for which separate licensure or certification is required."

As indicated above, functions, tasks or duties completed by geologists can include a broad array of activities. Examples of specific tasks or activities performed by geologists include:

1. Characterization of subsurface hydrogeologic conditions and distribution of chemicals in soil and groundwater at contaminated sites in order to develop an understanding of subsurface conditions and the need for remedial activities at the site.

2. Performance of bedrock fracture trace/lineament analysis which provide useful information in locating zones in bedrock where due to faulting, fracturing or jointing, there may be preferential groundwater flow and/or contaminant transport.

3. The study of nitrates in groundwater from agricultural, septage and sewage disposal practices or other sources such as aircraft de-icing, requires an understanding of hydrogeologic conditions to assess potential impacts to water supplies.

4. Understanding site-specific hydrogeologic conditions is important in assessing potential liability associated with real estate transactions. Decisions about acquisition and development of properties are made contingent upon the understanding of subsurface conditions.

5. Performance of water resource investigations and water supply development projects ranging from a site-specific scale to municipality- and drainage basin-wide studies. This work involves development of water supplies in both overburden soils and bedrock.

6. Well head protection studies are conducted to serve as a planning tool for development of properties in the vicinity of public water supplies.

7. Private water supply companies, municipalities and planning commissions retain geologic consultants to access the impacts of large water supply withdrawals on groundwater and surface water resources.

8. Groundwater use and development in the coastal zone engenders the need to assess saltwater intrusion and upcoming as part of evaluating the long-term viability of existing and proposed water supplies.

9. Ground penetrating radar (GPR) surveys are used for a broad range of objectives in characterizing geologic conditions. For example, GPR surveys are often used to assess for the presence of underground storage tanks, drums, vaults, voids or other structures which may serve as sources of contamination, as well as for possible obstacles which may interfere with development projects. Other geophysical exploration techniques include seismic methods to evaluate subsurface conditions, electromagnetic methods to track zones of contaminated groundwater, magnetic methods to assess the presence of subsurface metallic objects, and borehole geophysical methods to assess the presence of fractures in rock and the depths at which contaminated groundwater may be migrating.

10. Geologic characterization of coastal geomorphology and erosion have direct impact on property owners and possible development of properties.

11. The occurrence and distribution of radon in groundwater, soil vapor and via soil vapor migration, interior air is an issue of importance to all who reside in the Granite State. The occurrence and distribution of radon has been shown to be associated with certain geologic settings and formation types. These data have been and continue to be disseminated to the public for planning purposes and, on a site-specific basis, bear directly on protection of public health.

12. The occurrence and distribution of arsenic and mercury in urban soils, as well as antimony and beryllium in both urban and rural settings has been assessed, to provide input to NHDES to develop appropriate concentrations for these

constituents in urban and rural background settings, consistent with protecting public health, safety and welfare.

13. The evaluation of potentially seismically active zones in bedrock is important for the construction of major facilities including landfills, powerplants and dams.

14. Rock structural and textural analyses are completed to assess the inherent stability and strength of geologic materials in association with engineering analyses for construction projects dealing with rock cuts, design of dams, tunneling, siting of critical facilities and tiebacks. It is in the arena of large construction projects where the combined talents of geologists (typically engineering geologists) and engineers (typically geotechnical, structural and civil engineers) are brought to bear to assess the intrinsic properties of earth materials for subsequent project development.

15. The need for a clear understanding of geologic/hydrogeologic conditions and, we submit, their proper interpretation, is set forth in many of the rules governing programs under the purview of the New Hampshire Department of Environmental Services (NHDES). A few examples include:

16. Groundwater Management and Groundwater Release Detection Permits Administrative Rule Env-Wm 1403, Part 1403.07(d)(14) stipulates that a Site Investigation Report shall include "a description of the ***geology*** of the Site using text and graphical cross sections."

17. Solid Waste Rules Env-Wm 2504, Siting Requirements, indicate:
Env-Wm 2504.02 Groundwater Protection Standards.
    a. A landfill shall not be sited within the well head protection area of a community or non-community, non-transient water supply well system as delineated in the department's source water protection area inventory.

    b. A landfill and all associated leachate storage units shall be located only in areas where groundwater monitoring for release detection, characterization and remediation can be conducted prior to a release having an adverse affect on a water supply.

    c. Identification of the areas cited in(b) above shall be based upon a ***hydrogeologic*** investigation which provides all site specific information required to model the pre-construction and post-construction groundwater and surface water regimen.

    d. The base of the bottom liner system, or the base of the facility if unlined, shall be a minimum of 6 feet above the seasonal high groundwater table and the confirmed bedrock surface.

and Env-Wm 2504.05 ***Geologic*** Siting Limitations.

a. The footprint of a landfill and associated leachate storage units shall be a minimum of 200-feet from faults that have had displacement in Holocene time, meaning from Pleistocene to present or within the last 11,000 years.

b. No landfill footprint or associated leachate storage units shall overlie an area underlain by karstified dolomite or limestone or an area susceptible to mass movement of earth material such as landslides, rockfalls, mudslide, slumps, earth flows, or subsidence.

18. Characterization of geology/hydrogeology in association with development/protection of water supplies, for example, Env-Ws 379, Site Selection of Large Production Wells for Community Water Systems indicates in Section 379.07(a) that a conceptual hydrogeologic model of the source of water for the proposed well shall be developed by a person who, by education and experience in ***hydrogeology,*** is able to quantitatively analyze and interpret hydrogeology.

35. Is there a consensus on what activities constitute competent practice of the occupation? If so, state and document. If not, what is the basis for assessing competence?

As suggested above by the large range of tasks and activities potentially performed by licensed professional geologists, the practice of the profession of geology is very broad, consequently, developing a full list of all activities that constitute "competent practice" is not practical. There are, however, a finite number of underlying scientific principles which govern the technical aspects of the practice of the profession of geology. The assessment of the competence of a particular task or activity completed by an individual can be based on these general underlying principles. Some activities completed by geologists are relatively straight forward and objective, whereas others involve a large degree of professional judgement and subjectivity, commonly due to limitations in the amount of data to fully characterize the condition of interest. In general, several years of field experience are typically required to gain the fundamental experience required to manage projects and less experienced practitioners. Examples are given below:

1. The measurement of groundwater levels and the development of a groundwater elevation contour plan used to evaluate the direction of groundwater flow (and potentially contaminant migration) is relatively straight forward and objective at many sites with relatively simple subsurface geologic conditions.

2. In contrast, prediction of significant seismic events (i.e., major earthquakes) is much more difficult due to the regional scale of the issue, the large number and complexity of relevant factors, and although a huge volume of relevant data is available, subsurface conditions are generally not adequately characterized. Numerous geologists employed in both government and non-government entities

are currently studying ways to better predict the timing, location and magnitude of earthquakes, with limited success.

36. Is such competent practice measurable by objective standards such as peer review? Give examples.

In general, competent practice of the profession of geology can be evaluated by peer review by senior practitioners with extensive experience. In the case of the two examples given above:

1. Evaluation of the direction of groundwater flow based on observed groundwater elevations can be relatively straight forward depending on site hydrogeology. In such cases, there is relatively limited latitude in technically defensible interpretations of groundwater flow direction based on the available data.

2. In instances where the geologic conditions may be considerably more complex, the amount of data available may be substantially greater and yet still not sufficient to adequately characterize subsurface conditions, and multiple interpretations are possible. In these instances, competence can often be better judged by the process by which the data was evaluated, rather than the ultimate interpretations or conclusions based on those processes.

37. Specify activities or practices that would suggest that a practitioner is incompetent. To what extent is public harm caused by personal factors such as dishonesty? Document.

As indicated above, because of the broad range in activities or tasks completed by geologists it is impractical to specify all the activities or practices that if performed by a geologist would suggest that the practitioner is incompetent. However, the two example activities discussed above can be used for illustrative purposes:

1. If in the process of evaluating groundwater elevations and flow directions, an individual were to interpret that groundwater (that is water underground) was flowing uphill (i.e., from areas of lower elevation to higher elevation), generally, this would indicate a general lack of understanding or competence with respect to the performance of this task. While this may seem obvious, the interpretation of subsurface data requires significant training and experience, and subsurface flows may not follow the direction of surface contours.

2. In the case of earthquake prediction, the evaluation of competency would be more complex and subjective and involve a more extensive review of the evaluative process undertaken by the practitioner.

Personal factors such as dishonesty in the practice of professional geology can result in substantial public harm. Hypothetical examples of such instances include the following:

1. During the course of a property transaction, the geologist working for the property seller misrepresents to the buyer, the groundwater quality present at the site, due

to inexperience, an assessment conducted without the appropriate standard of care, or not being adequately familiar with regulatory requirements. The water quality is represented as being potable when in fact it is contaminated and unfit for human consumption. The real estate transaction is completed, the new owner of the property installs a water supply well on the property and use of the well may potentially result in a negative impact to the health of those who consume the contaminated water.

2. During the course of a major construction project, through either dishonesty or incompetence, a geologist misrepresents the structural and textural aspects of certain rock formations. These misrepresentations result in an improper evaluation of the strength of geologic materials. This improper evaluation of the strength of geological materials could result in the failure of the structure once constructed (e.g., dam failure, tunnel collapse, bridge washout).

VII. The occupation is clearly distinguishable from other occupations that are already regulated.

38. What similar occupations have been regulated in New Hampshire? Is it the business practice that needs to be regulated or the individual providing the service? Explain and give examples.

The practice of Professional Engineering has been regulated in New Hampshire under NHRSA 310-A, and elsewhere throughout the United States. Licensure is required to practice professional engineering in New Hampshire because practice of this discipline directly affects public health, safety and welfare. Professional engineers who practice in the fields of civil, environmental, and geotechnical engineering interact routinely with professional geologists in addressing geologic conditions and their impact on public health, safety and welfare. However, while some overlap may exist in the educational background and experience of practicing professional geologists and practicing professional engineers, the requirements for licensure for professional engineers and the definition of the practice of the profession of engineering are spelled out clearly in RSA 310-A along with comparable requirements for licensure of professional geologists and the practice of the profession of geology in Senate Bill 181-FN. Professional geologists and professional engineers complement one another in the practice of their respective professional disciplines.

It is important to make the distinction that the individual practicing the profession of geology needs to be licensed rather than regulating the business practice. It is the individual practitioner who offers a professional service to the public; it is the individual practitioner who practices the profession of geology; and it is the individual practitioner whose work bears directly on the public health, safety and welfare who should be regulated through licensure to assure that the interests of the public are kept paramount. As has been the case for licensure of individuals who practice professional engineering throughout the

United States, states have seen the need for, and implemented licensure of individuals who practice professional geology.

As has been discussed elsewhere in this questionnaire and in separate documentation provided to the Committee, it is the individual practitioner (i.e., a Licensed Professional Geologist) who holds the public interest paramount in his/her practice involving the profession of geology. For example, at contaminated sites, it is the Professional Geologist who needs to develop a viable conceptual model of subsurface conditions relying on application of geologic principles; this model provides the information necessary to assess risks to public health and the environment posed by the presence and distribution of contaminants in soil, groundwater, sediments, surface water, or air. Similarly, individual judgement and geologic interpretation are required in applying geologic principles to assess the prospects of certain locations for development of public water supplies, and whether such potential water supplies may be impacted by the presence of contaminants in soil or groundwater lying within the capture zone of water supply wells. Further, soil and bedrock structural and textural analyses are routinely completed to assess the intrinsic geologic properties of earth materials (i.e., stability, strength, hydraulic characteristics) to provide geologic information related to construction projects and infrastructure development.

39. Describe functions performed by practitioners that differ from those performed by occupations listed in the above question.

Professional geologists and professional engineers work collaboratively on many projects which directly affect public health, safety and welfare. Areas of professional practice are defined for the practice of professional engineering in RSA 310-A, and for the practice of the profession of geology in Senate Bill 181-FN. Simply put, professional geologists focus on characterizing and interpreting the earth's constituents (i.e., rock, soil, minerals, solids, groundwater, surface water, and gases) and impacts associated with both natural processes that act upon earth's materials and man-induced phenomena which may impact public health, safety or welfare (e.g., soil and groundwater contamination near a public water supply well). Professional engineers whose area of expertise leads them to work with earth processes and materials (i.e., civil, environmental, geotechnical engineering) focus primarily on assessing and interpreting conditions from the standpoint of developing systems or designing solutions which mitigate an adverse impact to public health, safety or welfare or provide a benefit to the public.

40. What is the relationship among those groups listed in response to question 38 and practitioners? Can practitioners be considered a branch of a currently regulated occupation?

Professional geologists and professional engineers serve as colleagues in providing their respective professional services, and collaborate on projects for public sector and private sector clients where both geologic and engineering disciplines come into play. For such multi-disciplinary projects, professional geologists and professional engineers rely on one another's capabilities and expertise.

Professional geologists are not, and can not be considered a branch of professional engineering. The educational requirements and professional experience requirements for licensure as a professional engineer are markedly different from educational and professional experience requirements for licensure as a professional geologist, as set forth in Senate Bill 181-FN. Although common areas of expertise exist among geologists and engineers, professional geologists do not, per se, meet the requirements for licensure as professional engineers. Since the practice of the profession of geology directly affects pubic health, safety and welfare, and professional geologists cannot be licensed as professional engineers, the professional engineering community, professional geologists, and cognizant state regulatory agencies have acknowledged the need for establishing licensure for professional geologists. In this regard, supporting documentation has been provided separately in writing to the Committee as well as through public testimony before the Committee.

41. What impact will the requested regulation have upon the authority and scope of practice of currently regulated groups?

Senate Bill 181-FN contains explicit language indicating that licensure of professional geologists and the practice of the professional of geology will in no way impact either the scope or authority of licensed professional engineers engaged in the practice of the profession of engineering. Specifically, in section 310-A:118 Definitions, the definition of the "practice of the profession of geology" includes the following: "The term shall not include the application of geologic information in the identification or determination of engineered solutions to protect the health, safety, and welfare of the public and the environment. The term shall not include the practice of engineering, land surveying, architecture, soil science or wetland science for which separate licensure or certification is required."

The intent of the language in the definition of the practice of the profession of geology is clear; namely, licensure of professional geologists will not impact on the scope or practice of licensed professional engineers as set forth in NHRSA 310-A. In point of fact, representatives of the professional engineering community have worked closely with professional geologists through a joint working group, to craft the bill for licensure of professional geologists which meets the needs of both professions. Supporting documentation, as well as testimony, have been offered to the Committee from representatives of the professional engineering community.

42. Are there unregulated occupations performing services similar to those of the group to be regulated? If so, estimate those numbers of unregulated practitioners.

Other than geologists, who are currently unregulated and would be regulated through licensure of professional geologists for their work which impacts public health, safety and welfare, there are no unregulated occupations performing such professional services outside of the geologic community.

43. Describe the similarities and differences between practitioners and the groups identified in the above question.

Again, there are no unregulated occupations which are performing professional services currently being performed by geologists. The intent of this legislation will be to license professional geologists whose practice impacts public health, safety and welfare.

44. Will this legislation create confusion in the marketplace regarding who is licensed and who is not?

No, the legislation will have the opposite effect. Licensure of professional geologists will provide clarification to the public regarding the qualifications of professional geologists whose work affects public health, safety and welfare. A historical perspective is readily available through the evolution of the practice of professional engineering. Once it became recognized that the practice of professional engineering had a direct impact on public health, safety and welfare, licensure of professional engineers provided a degree of surety to the public that a practitioner who offered his or her professional services was indeed qualified to provide such services in a manner protective of public health, safety and welfare. The standard of practice of professional engineering was raised as a direct consequence of licensure, a condition which has become self-evident in the many years following implementation of licensure for professional engineers. Likewise, many states have recognized a similar public benefit by licensing professional geologists. Licensure places an affirmative legal responsibility on professional practitioners and, concurrently, provides a specific legal basis for redress. The privilege of serving the citizens of the State of New Hampshire as a practicing professional, geologist or engineer, comes with the obligations and responsibilities licensure connotes. The clear benefit to the public of raising the standard of professional competence, which has evolved through licensure of professional engineers, will similarly occur through licensure of professional geologists.

45. Will this generate scope of practice or unlicensed activity complaints?

The historical perspective and experiences resulting from licensure of professional engineers is very helpful in assessing this matter. A Board of Professional Engineers exists which, among other things, investigates scope of practice or unlicensed activity complaints. Licensure of professional engineers requires that engineers meet certain ethical standards consistent with the public interest reflected in approval of a license. Failure to do so, or material deficiencies in professional practice, can lead to revocation of the license to practice the profession of engineering. Such occurrences have not been widespread; however, importantly, this means of redress is available to the public at large or affected individuals seeking relief. As importantly, this means of redress is more reasonably available and at far less cost than litigation.

Senate Bill 181-FN establishes a Board of Professional Geologists to serve in the same capacity as the Board of Professional Engineers for its respective profession. Scope of

practice or unlicensed activity complaints will be brought before the Board of Professional Geologists and dealt with in the same manner as similar circumstances within the professional engineering community. Licensed professional geologists will be required to follow scientific and ethical standards of practice consistent with the public interest reflected in approval of a license. Failure to do so can result in revocation of the license to practice the profession of geology.

This system has benefited the public with respect to the profession of engineering by raising the standards of practice through licensure of professional engineers and by holding these licensed professionals accountable for their professional services. A similar public benefit will ensue from licensure of professional geologists.

III. <u>The occupation requires possession of knowledge, skills, and abilities that are both teachable and testable</u>.

46. Is there a generally accepted core set of knowledge, skills, and abilities without which a practitioner may cause public harm? Describe and document.

There is a generally accepted core set of knowledge, skills, and abilities without which a practitioner may cause serious public harm. The requirements for licensure as a Professional Geologist contained in SB181 follow generally accepted standards as used in the 26 other states, plus Puerto Rico, where the profession is currently regulated. Those standards include demonstrated levels of education, experience, competence, and professional ethics.

47. What methods are currently used to define the requisite knowledge, skills, and abilities? Who is responsible for defining them?

There are none in New Hampshire under current conditions. In most states with regulation of geologists, the National Association of State Boards of Geology periodically conducts a national assessment of advances in scientific understanding as it relates to the practice of the profession of Geology to determine what knowledge, skills, and abilities are being used in the practice of the profession. These standards are imposed on licensed professionals in 26 states, plus Puerto Rico, by the licensing process. This process seems to protect the public from substandard and potentially injurious services.

48. Are those skills, abilities, and knowledge testable? Is the work of the group sufficiently defined that competence could be evaluated by some standard (i.e. : ratings of education, experience, or exam performance)? Is there a National Exam given to test this skill, ability, and knowledge level? What is the name of the test and the name and address of the testing service who has developed and offers this exam?

Yes. The work of geologists is sufficiently defined that competence can be evaluated by performance on an examination coupled with letters of recommendation from professionals familiar with the work of an applicant. There is a national examination available for use in state licensing. The examination is known as the ASBOG exam, named after the National Association of State Boards of Geology, and it is currently used in 22 states, plus Puerto Rico. Contact information is as follows:
National Association of State Boards of Geology
P.O. Box 11591
Columbia, SC 29211-1591
Telephone: 803-799-1047 Fax: 803-252-3432 www.asbog.org

49. List institutions and program titles offering accredited and non-accredited preparatory programs in New Hampshire. Estimate the annual number of graduates from

each. If there are no such programs in New Hampshire, list programs found elsewhere. Will out-of-state programs be recognized? How?

Institutions in New Hampshire that offer programs that meet the educational requirements of the proposed bill include:

- University of New Hampshire offers bachelors, masters, and Ph.D. degrees in geology and hydrology
- Dartmouth College offers bachelors, masters, and Ph.D.'s degrees in geology
- Keene State College offers bachelors degrees in geology

Out-of-state programs will be recognized from accredited domestic colleges and universities and recognized foreign institutions.

50. Apart from the above listed programs, indicate various methods of acquiring the required knowledge, skills, and ability such as apprenticeships, internships, on the job training etc.

Most professional geologists acquire additional training beyond the bachelor's degree through post-graduate education, internships, continuing education courses, seminars, and on the job training.

51. Estimate the percentage of current practitioners trained by each of the routes described in questions 49 and 50.

Almost all current practitioners have been trained by the routes described above.

52. Does any examination or other measure currently exist to test for functional competence in this profession? If so, indicate how and by whom each was it constructed and by whom it is currently administered. Include the name, address, and phone number. If not, indicate search efforts to locate such method.

The ASBOG examination referred to in the response to question 48 consists of two parts, a Fundamentals of Geology section and a Professional Practice of Geology section. The Fundamentals portion of the examination tests for essential knowledge of the scientific practices in the field of geology. The purpose of the Practice section is to test for functional competence in the profession. The examination is given twice a year and is administered by ASBOG through its member states. ASBOG's contact information is given in the response to Question 48 above.

53. Describe the format and content of each examination listed in question 52. Describe the sections of each examination. What competencies is each designed to measure? How do these relate to the knowledge, skills, and abilities in question 44?

As described above, the ASBOG examination consists of two parts: a Fundamentals of Geology and the Practice of Geology sections. The Fundamentals section measures essential knowledge of geology, and the Practice section evaluates capabilities in the principles and practices of the examination. The form and content of past ASBOG examinations have been enhanced through the use of numerous Subject Matter Experts invited by ASBOG to participate in the test development process. The test blueprinting and examination content are prepared based upon the results of periodic detailed national task analysis of licensed geologists practicing throughout the United States.

54. If more than one examination is listed above, which do you intend to support, if any? Why? If none of the above, why not and what do you propose as an alternate?

The ASBOG examination is currently the only nationally recognized examination available, and we support its use in New Hampshire. A major advantage of using the ASBOG examination in New Hampshire will be the ability for candidates to use the results of the test for states with reciprocity/comity arrangements and to apply the results as part of the application for licensure in other states.

Section E. <u>Economic Impact</u>

55. How many people are exposed annually to this occupation? Will regulation of the occupation affect this figure? If so, in what way?

The people who come into contact with geologists include their clients or consumers of the service provide by geologists (e.g., companies, owners of contaminated properties, municipalities, state agencies and the general public who may be at risk due to contamination or who rely on the protection of the state's water supply sources). We would estimate the number is at least a thousand each year. There over 4000 known contaminated sites in the state. Numerous communities and private companies also use geologists to perform work such as water supply development and protection. The regulation of the practice of geology will assure that those who rely on this critical work affecting human health and the environment, including clients, other private parties, and State and local government will have accurate information.

56. What is the current cost of the service provided? Estimate the amount of money spent annually in New Hampshire for the services of this group. How will regulation affect these costs? Provide documentation for your answers.

There is no complete compilation of the cost of services provided by geologists. However, a few programs do track the expenditure of public funds. For example, the Department of Environmental Services administers several petroleum reimbursement funds that have spent a total of $72 million dollars since 1990. Approximately 25-40% of the expenditures have been for services related to the investigation and characterization of the geologic setting and extent of contamination. Regulation is not anticipated to significantly affect these costs

because a large number of licensed professionals will continue to compete for work. However, the quality of that work will be improved.

57. Outline major governmental activities you believe will be necessary to appropriately regulate practitioners.

- Regulation will be by the newly created Board of Professional Geologists under the existing Joint Board
- Application for licensure will require credential and licensure requirements review
- An examination will be obtained from ASBOG and administered locally
- Biennial license renewal and continuing education credit approval wil be required
- Complaints will require investigation and possible enforcement

58. How many practitioners are likely to be certified if regulation is approved? Document.

Based on the experiences in other states where regulation of geologists has been instituted, a conservative estimate is that 300-600 geologists will apply for licensure during the 1-year grandfather period. There are currently 273 geologists regulated by statute in Maine, which adopted regulation of the profession back in 1973. In Pennsylvania, where regulation was adopted more recently in 1993, over 2500 geologists were licensed during the grandfather period. Because most geologists work in more than one state, we expect that a high percentage of the currently practicing geologists in the New England states will apply for licensure in New Hampshire.

59. How many practitioners are expected to apply each year if regulation is adopted? Document.

Statistics available from ASBOG indicate that between 200 and 250 candidates take the ASBOG examination annually. That number is expected to grow as more states adopt regulation legislation and begin to use the ASBOG examination. We estimate that 5% or more of the candidates taking the examination would apply for licensure in New Hampshire after the grandfathering period has closed.

60. If small numbers will apply in answers to 54 and 55, how are costs justified?

We expect a large number of applicants. The fees generated by the expected number of professionals to be regulated is sufficient to justify the costs of the program.

61. Does adoption of the requested regulation represent the most cost effective form of regulation? Indicate alternatives considered and costs associated with each.

Other forms of regulation were considered, such as registration and certification. However, these alternatives did not provide for the level of assurance and consumer protection provided by licensing geologists practicing in areas which have bearing upon public health, safety and welfare. The cost of administering the licensing regulation is essentially the same as the alternative, because the required components and administration of each program would be very similar.

Section F. - <u>Proposed Legislation</u>

62. Attach a draft of the legislation proposing new regulation. Please include:

a) whether or not a board will be established;
b) what background, education, and experience will be required;
c) if an examination must be successfully completed
d) if a grandfather clause will be implemented and what the deadline date will be; and
e) what actions will be prohibited and what disciplinary measures will be allowed.

A Board of Geologists would be added to the existing Joint Board of Professional Engineers, Architects, Surveyors, Foresters and Natural Scientists. The Board of Geologists would implement the provisions of the legislation including administering the licensing examination, establishing the license application and renewal procedures, and conducting disciplinary hearings and investigation complaints of misconduct.

The minimum requirements for licensure as a professional geologist are: bachelor's degree in geology or related field, 5 years experience (additional education can be applied toward a maximum of 2 years experience), pass two national (American Board of State Geologists) examinations, and meet the ethical standards set forth by the American Institute of Professional Geologists. Licenses will renewed every two years and 24 hours of continuing education are required over the two years for license renewal.

STANDARDS FOR THE EVALUATION OF THE NEED TO REGULATE AN OCCUPATION OR PROFESSION

The Legislature is often called upon to regulate professions and occupations which were previously unregulated. The following model has been developed to evaluate the need for regulation. The model may also be used to regulate a current statutory regulation.

I. Determine the Need for Regulation

Regulation should exist when it has been determined that the public's health, safety, and welfare would be harmed if the occupation/profession is not properly practiced. To assess whether there exists a need for regulation, the following threshold questions must be answered:

1. In what manner is the public health, safety, and welfare at such risk from the performances involved in this occupation that objective licensure and regulation are necessary?

2. Have there been complaints of abuse? How serious? How widespread? Number of complaints?

3. Do the complaints indicate a real and existing danger? What specific or general harm is the public now suffering because there is no present regulation?

4. Would licensing have prevented instances where abuse has been demonstrated? Would other remedies have worked as well?

5. Are normal free market controls inadequate for insuring quality of performance in the occupation or profession?

6. What is the source of demand for regulation? Does it come from the industry or as a result of consumer pressure? If industry sponsored, why does the group want to be licensed? Is it seeking to restrict or diminish competition, deny access to others, or protect its own economic interests?

7. Is there an intraprofessional conflict in which one group is seeking to gain dominance over another?

Determine the Level of Regulation

Where the answers to the above inquiries and the available evidence suggest that a problem exists, a determination must be made as to the level of regulation necessary for solving the problem.

Level 1 - No Regulation: Because the occupation or profession presents no perceived threat to public health, safety, and welfare, and problems can be controlled by market responses, there is no need for regulatory action by the State.

Level 2 - Voluntary Certification: 'This level of regulation occurs when it is determined that a public need exists to identify practitioners with specific levels of competence. Individuals who meet predetermined qualifications an certified. However, anyone may still practice the activity. Voluntary certification is therefore essentially an "Information provision" strategy, protecting consumers by informing them. In the past, this sort of state administered voluntary certification program sought to protect the "tide" granted to the certificate holder. Persons holding the certification could use that title (e.g. "interior designer") while uncertified persons could practice the same activities, yet were not allowed to use the title used by those who had undergone certification. In 1992, a court decision (Abramson v. Gonzalez, United States Court of Appeals, Eleventh Circuit, January 3, 1992) determined that it is unconstitutional to regulate a title without regulation of the activity.

Level 3 - Mandatory Registration: When it has been determined that an adverse occupational function could present a minimal threat to public heath, safety, and welfare then individuals will be required to register their name and address with a designated agency. Pre-entry screening is generally not required and performance standards are dictated by the marketplace.

Level 4 - Mandatory Licensure: Under this form of regulation, performance in an occupation will require licensure by the State. An individual will be required to have a demonstrated knowledge and skills related to the occupation prior to being allowed to perform such occupation functions. Under this regulatory scheme, it would be illegal for an individual to practice this occupation without having a current license.

III. Determine the Details of Regulation

1. Should the decision be made that licensure is the answer, the following questions must be addressed?

2. Can the scope of practice be defined?

3. How important is competence? Can objective standards of competence be established? Can competence be assessed in a reliable, objective manner?

4. How important are education and training? What type of training is required and what evidence supports this choice? Will alternatives be recognized?

5. Who will be excluded? Who will be "grandfather"

6. Are the disciplinary, enforcement, and/or inspection powers sufficient to insure effective regulation?

III. Determine Who Pays the Cost of Regulation

An area of additional concern when a determination to regulate is being considered or has been made is the cost. Careful consideration must be given not only to the direct costs of beginning and operating a new regulatory program but also to the indirect costs that might ultimately have to be paid by the consumer.

Specific emphasis must be placed upon a "cost vs. benefit to consumer" analysis. The following issues must be addressed as part of this analysis:

1. If regulation (including costs) tends to be exclusionary, how will it affect entry into the profession or occupation?

2. How will the immigration of practitioners be affected?

3. What will the overall impact be on the availability, quality, and cost of services to consumers?

4. Is regulation likely to be accompanied by restrictions or advertising or on other types of competition? What would such practices cost the consumer? What factors are likely to result which will be a savings to the consumer?

V. Revisiting the Decision to Regulate

Every regulatory program or scheme should be subject to periodic legislative review. The purpose of this review would serve two purposes: (1) deregulation of occupations and professions where the need for regulation no longer exists; and (2) reform of regulatory schemes whose continued existence is desired. This reform process could include elimination of unnecessary provisions and fine tuning existing provisions to insure effective regulation.

It is recommended that the factors considered above become the foundation of any initial analysis regarding whether regulation is appropriate for any profession or occupation. In addition, this same type of study must be performed as part of the periodic review of each regulatory scheme.

Telephone: (603) 271-2155
Fax: (603) 271-1728

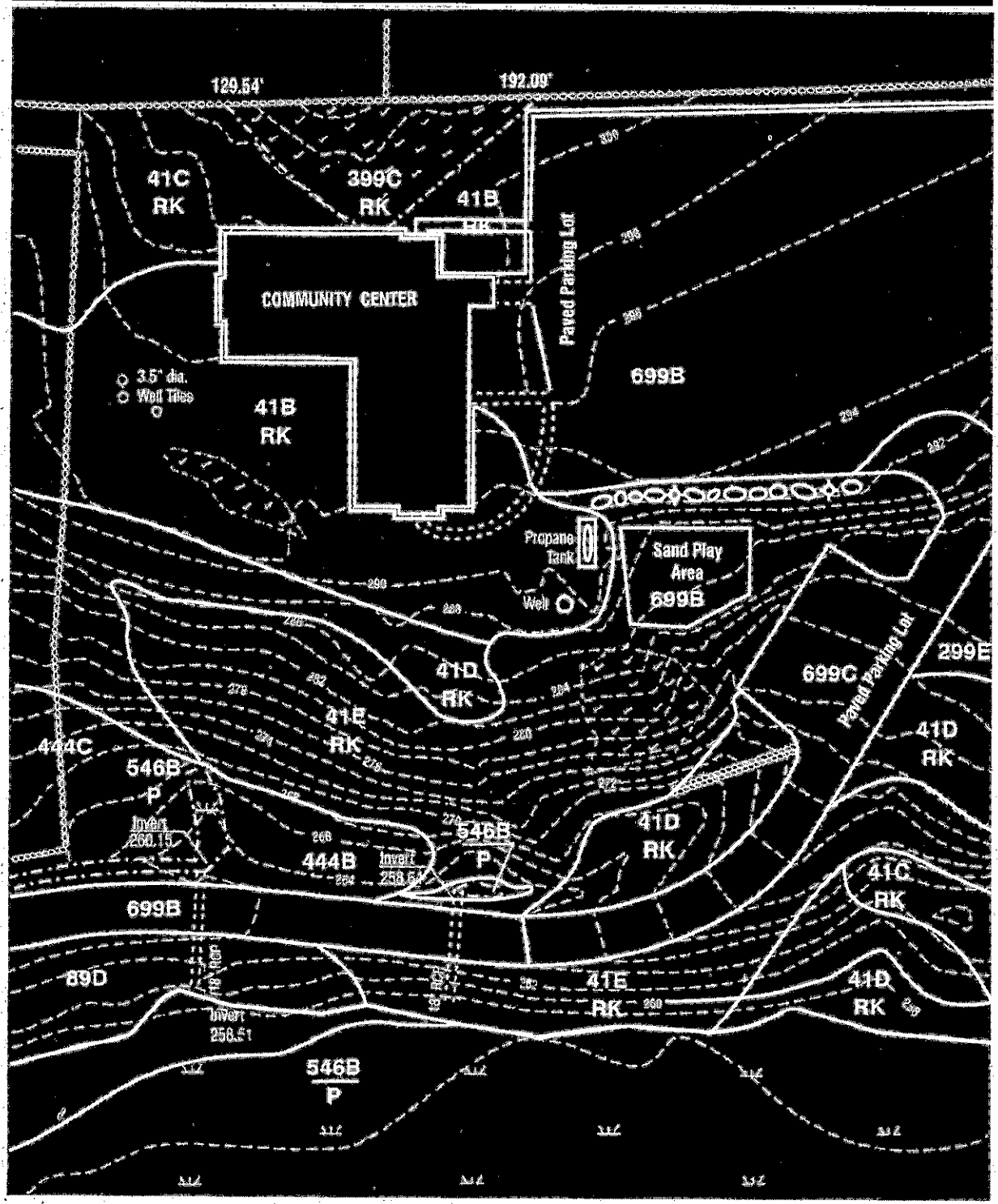
FRANCESCA LATAWIEC, CPSS, PWS
Principal Planner

State of New Hampshire
Executive Department
Office of State Planning

2½ Beacon St.
Concord, N.H. 03301
Printed on Recycled Paper

Data Requirements for Site Review: Guidance for Planning Boards

New Hampshire Office of State Planning • May, 1999



Data Requirements for Site Review: Guidance for Planning Boards

State of New Hampshire,
Jeanne Shaheen, Governor

New Hampshire Office of State Planning,
Jeffrey H. Taylor, Director

New Hampshire Department of Environmental Services,
Robert W. Varney, Commissioner

May, 1999

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DATA REQUIREMENTS FOR SITE REVIEW: GUIDANCE FOR PLANNING BOARDS

I. Introduction

This report presents a set of guidelines for State and local government in New Hampshire concerning the subdivision and use of land. The impetus for this report came from the release by the Soil Scientist Society of Northern New England (SSSNNE) of new site specific soil mapping standards (SSSMS) in June, 1997. Questions were raised about these standards, the accuracy of field methods, when the standards should be required, and their relation to the previous high intensity soil mapping which has been required by many New Hampshire communities. In response to these questions, the Office of State Planning (OSP) and the Department of Environmental Services (DES) invited representatives from a number of professional organizations and governmental agencies to come together to develop uniform land use planning and regulatory guidelines for municipalities which would have a broad base of support.

Members of the following organizations and interests served on the Committee:

NH Department of Environmental Services: *William E. Evans, P.E. and Karla McManus*
NH Office of State Planning: *Jeff Taylor, Jim McLaughlin and Francesca Latawiec*
Granite State Designers and Installers Association: *Alden Beauchemin, Charles Pearson, Richard Clough, Ken Bradley and Carl Sherblom*
NH Water Council: *Rep. David Kibbey*
Natural Resources Conservation Service: *Steve Hundley*
NH Municipal Association: *Susan Slack*
Rockingham Planning Commission: *Glenn Greenwood*
Rockingham County Conservation District: *Mary Currier*
NH Association of Conservation Districts: *John Hodsdon and Robert Ward*
NH Association of Conservation Commissions: *Marge Swope*
NH Board of Natural Scientists: *Tim Ferwerda*
NH Association of Consulting Soil Scientists: *Larry Morse*
NH Association of Wetland Scientists: *James Gove*
Private soil and wetland consultants: *Peter Schauer and Dave Allain*
Homebuilders Association of NH: *Steve Lewis*

The Committee met every two weeks during the spring and summer of 1998 with the objective of preparing this document and presenting its findings at the OSP Planning Conference on November 14, 1998.

Among the observations and concerns that surfaced during the deliberations of this Committee were the following:

- **Lack of consistency between local and State requirements.** Certain towns require High Intensity Soil (HIS) maps as the basis for soil-based lot sizing. The NHDES under RSA 485-A requires soils maps based on the National Cooperative Soil Survey (NCSS) standards as part of the permitting process for subdivision and subsurface wastewater treatment systems. HIS maps do not conform to NCSS standards and are therefore not acceptable for NHDES' permit requirements.

  Another example of inconsistency between levels of government is the definition and delineation of wetlands. Many towns use poorly and/or very poorly drained soils to define wetlands for local zoning purposes. The State Wetlands Bureau uses the 1987 Army Corps of Engineers Manual, which calls for delineation of wetlands according to three parameters: hydric soils, hydrophytic vegetation and wetland hydrology. Hydric soils are further determined in accordance with the 1998 Field Indicators for Identifying Hydric Soils in New England prepared by the New England Interstate Water Pollution Control Commission (NEIWPCC).

- **Consistency in permitting requirements within the Department of Environmental Services.** NHDES should strive to make the definitions and standards used by its various bureaus consistent across the entire department.

- **Improvements in our understanding of natural processes and methods.** As new scientific data, standards and methods are developed, it is important that this information be transmitted to municipalities for use in making land use decisions. For example, the Site Specific Soil Mapping Standards (SSSMS) are consistent with National Cooperative Soil Survey standards. Thus, a site specific map prepared in accordance with SSSMS for local approval processes would also be acceptable for NHDES Subsurface approval. A SSS map would also be consistent with the regional field indicators for identifying hydric soils and the soils identification portion of the delineation of federal jurisdictional wetlands.

- **Different requirements from one town to another in land use regulation.** Town ordinances and regulations affecting land use - zoning, site plan, subdivision, health ordinances - vary widely in terms of the requirements placed on developers and land owners. While this diversity is to be expected, given the unique history, natural setting, and cultural values of each of the 234 communities in New Hampshire, a consistent approach to soils mapping and wetland delineation requirements is desirable.

- **Inconsistent requirements within a town's ordinances and regulations.** This observation concerns the inconsistency that sometimes occurs where different and, at times, conflicting definitions, standards or requirements are present within a set of municipal land use regulations and ordinances.

II. Committee Findings

The Committee developed a goal which guided its deliberations and can be summed up in the following Statement: ***"In order to streamline the process and avoid confusion, put together a reasonable, comprehensive guideline that addresses soil and wetland related natural resource issues with regard to subdivisions, wastewater disposal systems, lot size criteria, general development and other uses."***

A number of findings were adopted by the Committee as the basis for its recommendations:

- There is increasing development pressure on less suitable land, especially in the southeast portion of State. As development has progressed, the better, more easily developed lands have tended to undergo conversion to residential and commercial uses. During subsequent rounds, less suitable lands have become candidates for development. Often these parcels contain wetlands, steep slopes, rock outcrops, soils with bedrock within 18 inches of the soil surface, and other features that present difficulties for building, road and other construction activities.
- State and local authorities should regulate development so that natural resources are protected, including surface water and groundwater resources. As growth pressures begin to turn toward the more difficult parcels, these same tracts of land often contain natural resources that ought to be protected. At a minimum, State and local regulations should require these resource areas to be shown on any development proposal.
- State and local authorities should allow available resource information to be employed in the permit application/review process, if the data is at an appropriate scale and level of detail to make land use decisions for the proposed intensity of development. The generalized data should be verified by on-site investigations to corroborate that the existing information is valid for the site and that it meets US Department of Agriculture/NRCS/NCSS or other established standards.
- State and local authorities should strive for consistency in terms of resource definitions, sources of information, and standards for field measurement/verification of required data.
- The Committee recommends the following as the best available guides for on-site resource characterization and mapping, consistent with State statutes and administrative rules:

  Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, Environmental Laboratory, Department of the Army, 1987;

  Field Book for Describing and Sampling Soils: Version 1.1 National Soil Survey Center, NRCS, 1998;

  Field Indicators for Identifying Hydric Soils in New England, Version 2, New England Interstate Water Pollution Control Commission, 1998; and

  Site Specific Soil Mapping Standards for New Hampshire and Vermont, Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999;

- State and local authorities should require the certification or permitting of qualified professionals capable of preparing on-site information for development proposals as essential steps to protect the public and the environment.

- Professional organizations and State and regional planning agencies should cooperate to provide consistent, defensible, science based advice to municipalities on regulatory standards.
- Land use regulations often require that all applicants adhere to the same requirements, regardless of the size, extent or nature of the proposal. There appears to be a need for flexibility in the level of information required, depending on the circumstances of the land in question and the proposed use. This document provides guidance to communities in deciding on the appropriate level of information to require of an applicant.
- The NH Department of Environmental Services should revise its rules to incorporate standards for confirmation of an NRCS soils map and for the identification of limiting physical features on a site.

III. Summary Guidelines for Required Information

This document recommends the type of information about a site's physical characteristics that should be required of applicants for subdivision or site plan review approval. Every proposal has unique site characteristics, including both amenities and limitations for development. Therefore, it is appropriate to tailor the information required about a site to match the physical attributes and proposed intensity of development for that parcel.

- In all cases the planning board should require that wetlands and surface waters be delineated for the proposed site. An emphasis should be placed on avoiding or minimizing the impacts of disturbance on these resources.
- Where intense development is proposed it is appropriate to require the detail of a site specific soil (SSS) map. Such a map will help both the applicant and the planning board to identify areas with limitations for site development as well as areas that are suitable for locating structural improvements. Three criteria are offered to measure development intensity sufficient to warrant a site specific soil map:
  - Areas with average lot sizes less than two acres, without municipal water and sewer;
  - Areas with average lot sizes less than one acre, with municipal water but without municipal sewer;
  - Areas with less than 20,000 contiguous square feet of land that is not wetland and does not have any limiting physical features and without municipal water and sewer; and
- Furthermore, areas without water and sewer with soil complexes with dramatically different characteristics should require a SSS map.

If any of these criteria applies to a development proposal, the applicant should submit a site specific soil map and the planning board is justified in requiring it.

Where larger lots or low intensity of development is proposed, the level of detail provided by a site specific soil map may not be necessary. The planning board may be able to make an informed decision on such applications based on the NRCS county soil survey maps. In these instances, the planning board should require the applicant to provide evidence that the site conditions reflected in the NRCS mapping are corroborated by on-site soils investigations. If the evidence is consistent with the

NRCS data, then this level of information may be adequate for planning board review. If the evidence is not consistent, or if limiting physical features are identified on the site which would affect its use, then the planning board must decide if a site specific soil map is required. Limiting physical features include rock outcrops, soils with bedrock within 18 inches of the soil surface, steep slopes greater than 35 percent and very poorly drained areas. It should be noted that NRCS county soil maps do not show areas of contrasting soil which are less than 3 to 5 acres in size.

If complicated site conditions are known to be present, an applicant may shorten planning board review time by providing a SSS map at the outset. Similarly, the planning board may require submission of a SSS map if an application meets the development intensity criteria, significant limiting physical features are known to exist on the site, or there are areas without water and sewer with soil complexes with dramatically different characteristics. ***All applicants should take advantage of the opportunity to have preliminary discussions with the planning board, either conceptual consultation or design review, prior to submitting a completed application. This can help the board and the applicant to determine the appropriate level of site specific data to be submitted with the application.***

IV. Information Required for Subdivision and Site Plan Review

This section describes three levels of technical information to be submitted to the planning board by applicants for subdivision or site plan review approval. The intent is to provide the board with guidance as to the type of data needed for making informed land use decisions about developments of different magnitudes and levels of intensity. For each level, the data to be required is specified, as well as the standards to be used in preparing the data and the type of professional qualified to do the work. The following statutes and administrative rules adopted pursuant to them specify which professionals are certified or permitted and qualified to prepare on-site technical information:

- RSA 310-A:76, II states that a certified soil scientist is qualified to identify, classify and prepare soil maps according to NCSS or DES standards.
- RSA 310-A:76, II-a states that a certified wetland scientist is qualified to delineate wetland boundaries and prepare wetland maps in accordance with DES or USACE standards.
- RSA 310-A:79, IV allows a permitted septic designer to determine a hydric soil boundary or test pit evaluation under RSA 485-A:35.
- RSA 485-A:34 requires soil data, consisting of maps and charts prepared by NRCS or equivalent as part of an application for subsurface disposal systems.
- RSA 485-A:35 requires plans and specifications for subsurface disposal systems to be prepared by a septic designer permitted by DES.

Figure 1. is a schematic diagram showing implementation of the review process.

Figure 2. identifies the methods and standards which apply to the information required for each of the three levels of review. It also indicates the type of professionals who may be qualified to provide the information. A list of the full citations of the methods and standards to be used, by review level, is presented on page 25 in the Sources and References section of this document.

Figure 1. Submission Process

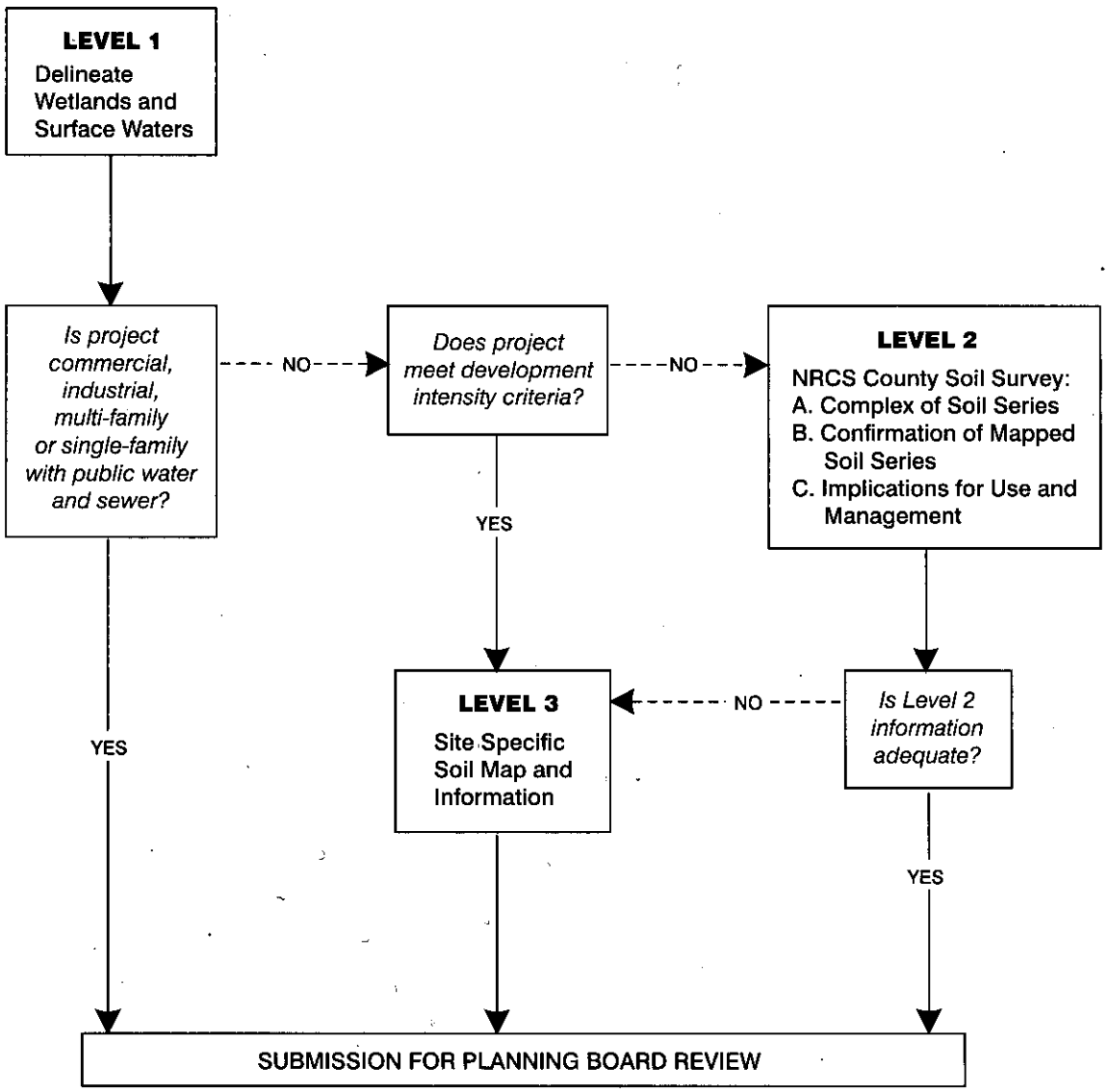


Figure 2. Levels of Information for Subdivision and Site Plan Applications

LEVEL	TASKS	STANDARDS	QUALIFICATIONS
1	**Step A.** Wetlands Delineation	• 1987 US Army Corps of Engineers Wetlands Delineation Manual • 1998 Field Indicators for Identifying Hydric Soils for New England	Certified Wetland Scientist, or Permitted Septic Designer*
	Step B. Surface Waters Delineation	• Defined by RSA 485-A:2, XIV	
2	**Step A.** Identification of Dramatically Different Soil Complexes	• Appendix 1 of this document. • NRCS Official Series Description Sheets and/or NRCS published map unit descriptions (Steps A-C).	Certified Soil Scientist or Permitted Septic Designer*
	Step B. Confirmation of NRCS Soil County Soil Survey Map	• Field Book for Describing and Sampling Soils: Vers. 1.1, 1998 • Site Specific Soil Mapping Standards for NH & VT, 1999 • Keys to Soil Taxonomy, Eighth Edition, 1998	
	Step C. Identification of Limiting Physical Features	• Same as Step B	
3	Site-Specific Soil Map, when: a. Average lot size <2 acres, without municipal water and sewer, or b. Average lot size <1 acre, with municipal water, but without municipal sewer, or c. Non-limiting, non-wetland contiguous area <20,000 square feet and without municipal water and sewer, or d. Areas without municipal water and sewer and with soil complexes with dramatically different characteristics.	• Site Specific Soil Mapping Standards for NH & VT, 1999	Certified Soil Scientist
	* Per RSA 310-A:79, IV and NH Code of Administrative Rules Chapters Env-Ws 1000 adopted under RSA 485-A for the purpose of septic system design or subdivision applications.		

LEVEL 1.
Delineation of Wetlands and Surface Waters
For ALL Subdivision and Site Plan Applications

The first level of information, Level 1, is required of all proposed site plan and subdivision applications. It involves the on-site delineation of wetlands and surface waters existing on the subject property. All plan applications should show the location and extent of wetlands and surface waters on the parcel or parcels under consideration, directly on the plan. Wetland and water body information is intended to demarcate the upland portions of a property on the site. This allows the board to know the location of the more sensitive natural resources and to determine if the development structures are proposed to be sited in or near them.

Level 1 information on wetlands and surface waters shall be provided on a site plan with identification and delineation of the resources in accordance with the definitions and standards specified in Steps A and B, below. The written documentation specified in Step C shall be included on the site plan and be certified by the stamp of a qualified professional.

Step A: Wetlands Delineation

- Chapters Wt 100-800 of the NH Code Of Administrative Rules, April 21, 1997.
- Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, Environmental Laboratory, Department of the Army, 1987.
- Field Indicators for Identifying Hydric Soils in New England, Version 2, New England Interstate Water Pollution Control Commission, 1998.

Step B. Surface Waters Delineation

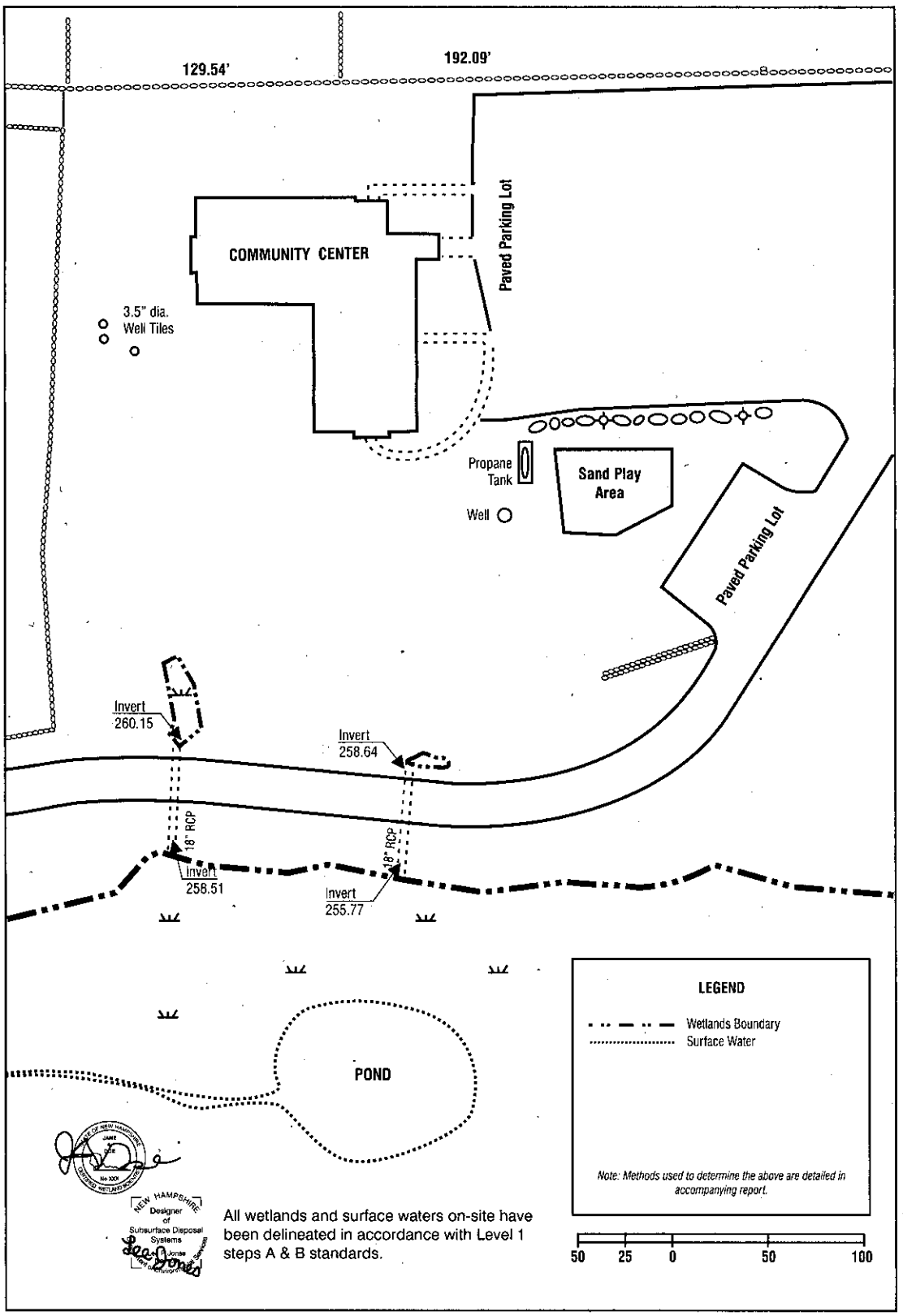
- RSA 485 - A:2, XIV, NH Safe Drinking Water Act.

Step C. Written Documentation

- A written statement on the site plan, ***certified by the stamp of the Certified Wetland Scientist (CWS)*** *in accordance with RSA 310:76,II-a* ***or Permitted Septic Designer (PSD)***, in accordance with RSA 310-A:79,IV and NH Code of Administrative Rules Chapters Env-Ws 1000, adopted under RSA 485-A, for the purpose of septic system design or subdivision applications, that all wetlands and surface waters on-site have been delineated in accordance with the standards specified in Steps A and B above.

Figure 3. shows a schematic diagram of a site plan illustrating Level 1 wetlands and surface waters. Note that the sources required by steps A and B above should be cited directly on the site plan.

Figure 3. Schematic Diagram of Level 1 Wetlands and Surface Waters Delineation



Determining the Next Level Based on the Type of Proposal

1. If a project involves commercial or industrial development or residential use which is served by public water and sewer, ***the applicant may proceed to file an application with the planning board***. In these cases, since on-site wastewater disposal is not an issue and other limiting features should be mitigated as part of the plan, submission of soils data is at the discretion of the planning board.

   Additionally, if the site development calls for structures and/or impervious cover of an area greater than 100,000 square feet, or 50,000 square feet within the protected shoreland, ***then the applicant should file a site specific application under RSA 485-A:17, significant alteration of terrain.***

2. If the project meets at least one of the following three development intensity criteria, ***then the applicant should proceed directly to Level 3:***

   - lots in a proposed subdivision average less than two (2) acres in area, and are not served by either municipal water or sewer;
   - lots in a proposed subdivision average less than one (1) acre in area, and are served by municipal water, but not sewer; or
   - the non-limiting, upland, contiguous area on any proposed lot without municipal water and sewer is less than 20,000 square feet.

   Note: For the purpose of interpreting these criteria, the following definitions apply:

   "Average area" means the total acreage of the property, exclusive of very poorly drained soils, divided by the total number of proposed lots. (Use of average area here assumes that all lots are roughly the same size.)

   "Non-limiting" means the area, exclusive of very poorly drained soils, rock outcrops, bedrock within 18 inches of the soil surface and soils with steep slopes greater than 35 percent.

3. ***For all other projects, proceed to Level 2.***

If the proposal meets none of the above tests, then Level 2 information is potentially adequate for local review, provided that the NRCS soil survey information is determined to be sufficient for the proposed use and management of the property.

LEVEL 2.
Confirmation of County Soil Survey Maps and Identification of Limiting Physical Features For Plans with Larger Lot Sizes or Lower Development Intensity.

A Level 2 review includes submission of existing data, such as soil maps representing the NRCS county soil survey. For this level, an applicant is required to submit and evaluate detailed soil profile descriptions to corroborate the soil series and map unit determination based on the county soil survey. The procedure for doing this is outlined below.

Step A: Identification of Soil Complexes With Dramatically Different Characteristics

- If any of the soil map units on the property, as mapped by the NRCS county soil survey, is a complex of soils with dramatically different characteristics that would have an impact on use and management of the property, ***then the applicant must provide Level 3 information.*** (Appendix 1, prepared by the NRCS State Soil Scientist, lists these complex soil map units.)
- If the soils mapped by the NRCS county soil survey is ***not*** one of these complexes, ***continue to Step B.***

Step B: Confirmation of NRCS County Soil Survey Map

The following information is required to be submitted for confirmation of the NRCS county soil survey:

- A copy of the NRCS county soil survey with the subdivision location and approximate boundaries superimposed on the soil map. (Appendix 3, page 34.)
- A representative number of detailed soil profile descriptions to characterize variations in the landscape for each mapped unit, based on NRCS standards. These are to be included in a narrative report for the project. The standards and methodologies for doing this description are listed here. Note that the sources required by step B should be cited directly on the site plan. (Appendix 3, page 34 and Figure 4, page 14.)

Standards

The required tasks specified under Level 2 are to be carried out according to the standards found in the following documents:

- Field Book for Describing and Sampling Soils: Version 1.1 National Soil Survey Center, NRCS, 1998.
- Keys to Soil Taxonomy, Eighth Edition, USDA/NRCS 1998.
- NRCS Official Series Description Sheets and/or published map unit descriptions USDA/NRCS.

Methods

A minimum of one soil profile description shall be completed per soil map unit within the subdivision or site plan area, as depicted on the NRCS county soil survey. The soil will be described in sufficient detail, so as to support or refute that identified properties are within, or similar to those of the soil series used to name the map unit.

Soils descriptions should be carried out in areas suspected of having the greatest likelihood of contrasting soil features. Some map units will require more than one soil description to document soil variability.

The map unit purity standards from Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999, will apply.

- The location(s) of the soil profile description(s) used to corroborate the NRCS soil series shall be shown on the site plan, with a reference to the description(s) in the narrative report for the project.
- A detailed comparison between each soil profile description and the representative pedon (a description of a small three-dimensional area of soil, that is typical of the soil series in the county) for that soil from the county soil survey. The NRCS Official Series Description Sheets and/or NRCS published map unit descriptions for each mapped unit are to be used as references.
- A written statement that the soil profile description(s) from the site adequately reflect the range of characteristics for the series, as described in the county soil survey. The statement shall indicate that the county soil survey adequately represents soil and landscape characteristics, such that site specific land use decisions can be made without further soil investigations. ***This statement is to be certified by the stamp of the CSS or PSD. If this statement cannot be made, proceed to Level 3.***
- A narrative report for the project which summarizes the information compiled in Step B. This shall include a determination of whether limiting physical features are present on the parcel and indicate the specific mapped soil units where these occur. ***If any limiting physical features are identified on-site, then Step C is required.***

Three examples of suggested documentation for NRCS soil map confirmation for Step B are presented in Appendix 3. Note that this information is to be accompanied by a detailed narrative report which explains the documentation.

- If the on-site investigations confirm the nature and properties of the soils as reflected by the soil map, consistent with the intended use and intensity of development, ***a Level 2 review will be adequate for the planning board's purposes.***

Step C. Identification of Limiting Physical Features

If the on-site soil investigations indicate that limiting physical features which have the potential to affect the usability of certain areas for structures, on-site wastewater disposal systems or roads, they must be identified and documented by the applicant.

In addition to the information required in Steps A and B, the following information is required for identification of limiting physical features:

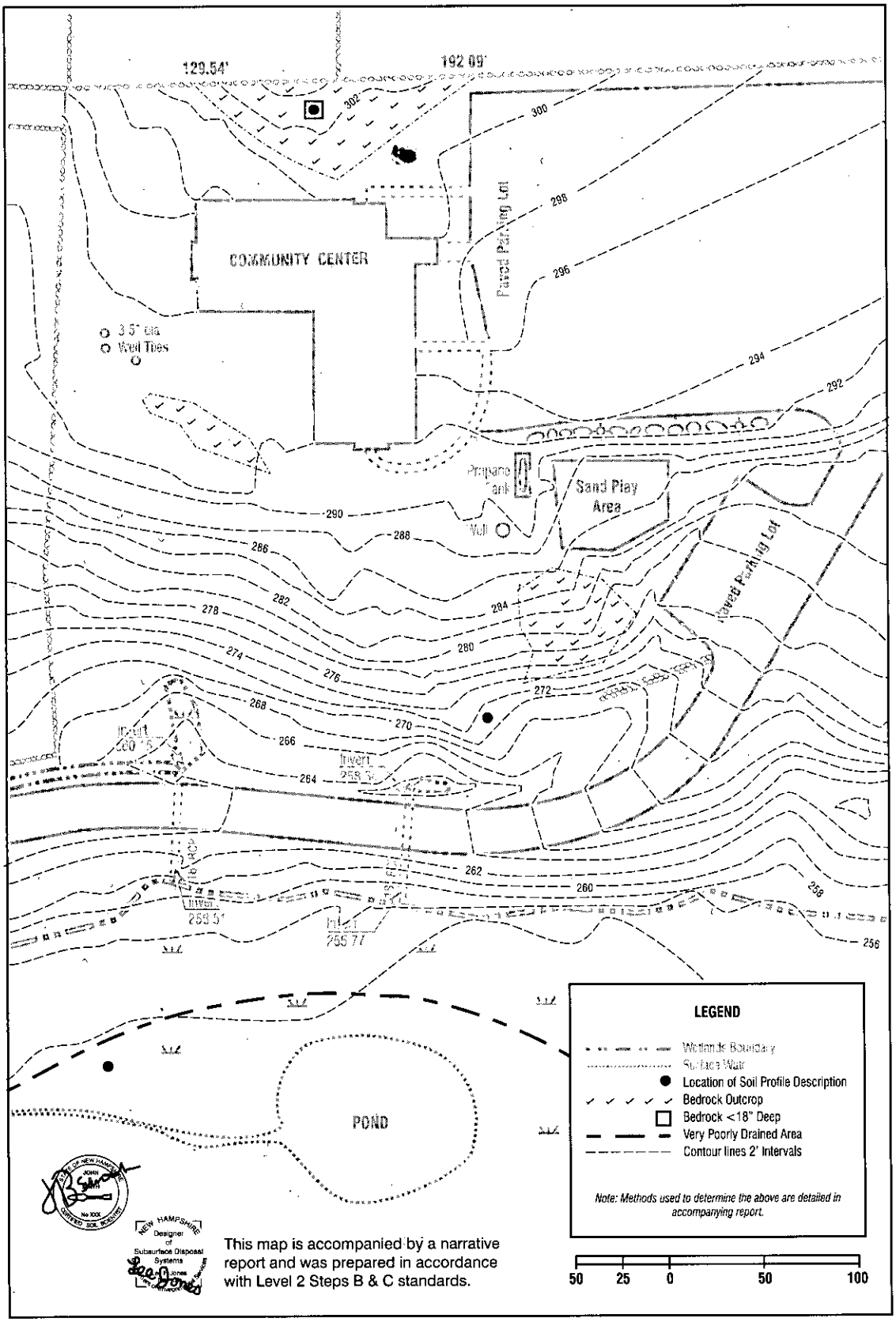
- Delineation of the limiting features, specifically rock outcrops, steep slopes > 35%, soils with bedrock within 18 inches of the soil surface and very poorly drained areas on-site. These features are to be shown on the site plan. (The terms used to describe the limiting physical features are defined in Appendix 2)
- A detailed description of each limiting physical feature, based on NRCS standards, in a narrative report for the project, with reference to its location on the site plan. This can either be done as a stand alone document or as an amendment or addendum to the narrative prepared under Step B.
- A written statement that the limiting physical features identified above would not have a significant impact on use and management of the property. ***This statement is to be certified by the stamp of the CSS or PSD. If this statement cannot be made, then proceed to Level 3.***
- A written statement to indicate that the county soil survey adequately represents soil and landscape characteristics such that site specific land use decisions can be made without further soil investigations. ***This statement is to be certified by the stamp of the CSS or PSD. If this statement cannot be made, then proceed to Level 3.***
- A written statement that limiting physical features are present on the parcel(s) and that ***either (1) a SSS Map (Level 3) is required or (2) not required, with supporting documentation for this position. This determination is to be certified by the stamp of the CSS or PSD. If a SSS Map is required, then proceed to Level 3.***

A schematic diagram of a site plan illustrating Level 2 limiting features, identified as part of Step C, is shown in Figure 4. Observe that there are no steep slopes greater than 35% shown in Figure 4, due to the lack of such a limiting feature in this example. Also note that the information shown in Figure 4 is to be accompanied by a detailed narrative report which explains the documentation. The report shall include the three written statements, certified by the stamp of the CSS or PSD, as required by Step C above. Three examples of suggested documentation for NRCS map confirmation are shown in Appendix 3, page 34. Note that the sources required by Step B of Level 2 should be cited directly on the site plan.

- If the on-site investigations confirm the nature and properties of the soils as reflected by the soil map, consistent with the intended use and intensity of development, ***a Level 2 review will be adequate for the planning board's purposes.***

The ultimate decision as to whether or not Level 3 information is required is up to the planning board.

Figure 4. Schematic Diagram of Level 2 Limiting Features



LEVEL 3.
Site Specific Soil (SSS) Map for Intense Development or Sites With Limiting Features

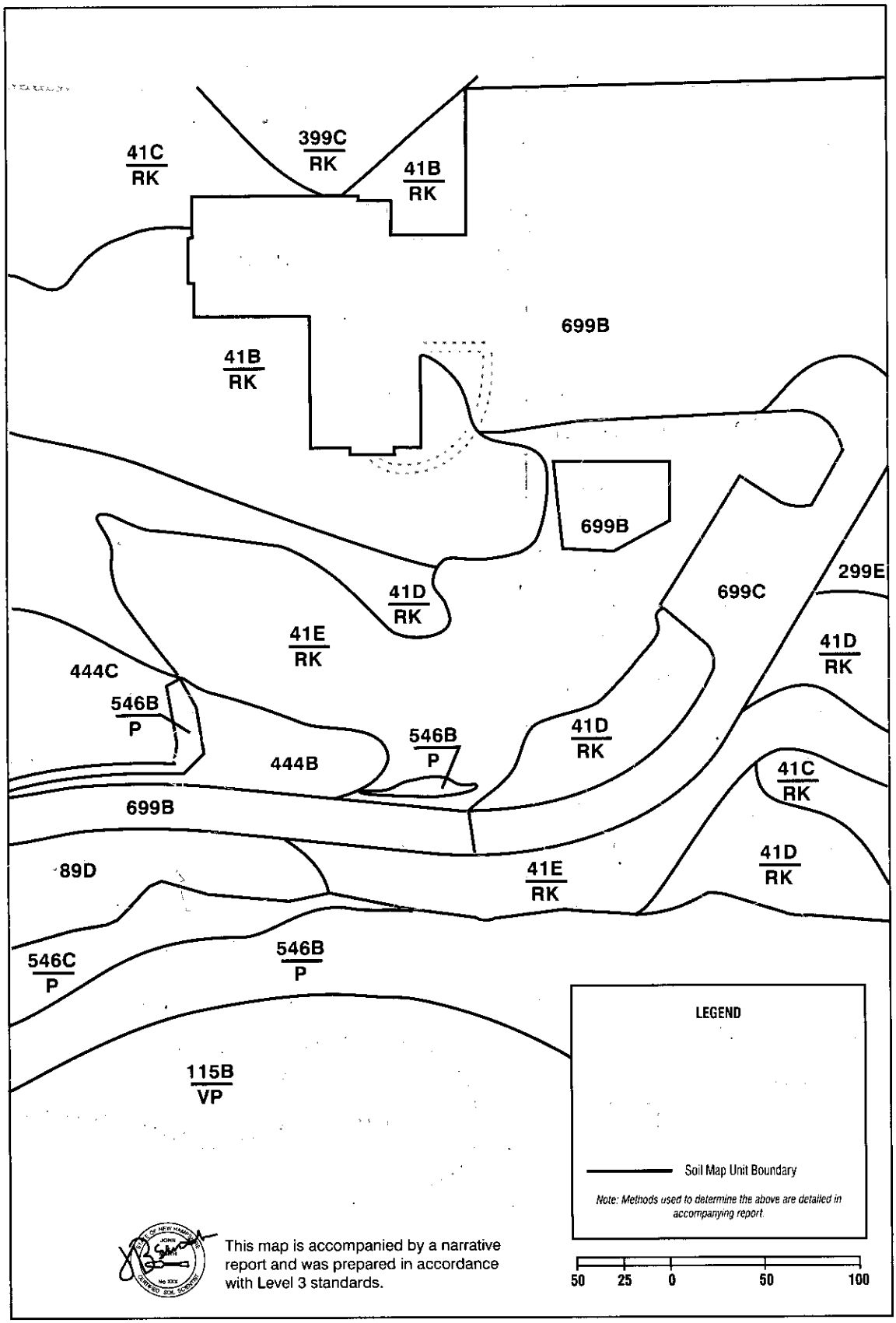
Level 3 requires a site specific soil map prepared in accordance with Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999. ***This is to be certified by the stamp of the CSS.***

A schematic diagram of a Level 3 SSS map is shown in Figure 5. A typical soil map unit key is shown on page 17, along with a map notation that is required to be placed on all site specific soil surveys. Pages 18-21 contain sample pages from a site-specific soil survey report which describe each soil map unit found on the property.

Final Plan

A schematic diagram of a final plan that incorporates all three levels of technical information is shown in Figure 6, page 23.

Figure 5. Schematic Diagram of a Level 3 SSS Map



SITE SPECIFIC SOIL MAP UNIT KEY

Symbol	Map Unit	Slope Class	Drainage Class	HIS Symbol
115B / VP	Scarboro mucky loamy sand	0-8%	Very Poorly Drained	611BH
546B / P	Walpole sandy loam	0-8%	Poorly Drained	511BH
699B	Urban Land pavement	0-8%	Impervious Surface	363BH
699C	Urban Land pavement	8-15%	Impervious Surface	363CH
444B	Newfields fine sandy loam	0-8%	Moderately Well Drained	321BH
444C	Newfields fine sandy loam	8-15%	Moderately Well Drained	321CH
41B / Rk	Chatfield-Hollis Rock Outcrop	0-8%	Well Drained	22XBH
41C / Rk	Chatfield-Hollis Rock Outcrop	8-15%	Well Drained	22XCH
41D / Rk	Chatfield-Hollis Rock Outcrop	15-25%	Well Drained	22XDH
41E / Rk	Chatfield-Hollis Rock Outcrop	25-50%	Well Drained	22XEH

Map Notation: To be Placed On All Site-Specific Surveys

"This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, produced by a certified soil scientist, and is not a product of the USDA Natural Resources Conservation Service. A narrative report accompanies this map and map key.

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 115B / VP

Map Unit Name: Scarboro mucky loamy sand, 0-8% slopes

Landscape Settings: This soil type is found in the concave or nearly level areas of the property.

Surface Features: The areas with this map unit are associated with the wetland that is delineated in the northern section of the property.

Drainage Class: Very Poorly Drained

Parent Material: Organic material overlying sandy glacial outwash.

Complex: Yes ( ) No (√)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Areas of dissimilar inclusions consist of small areas where the soils are poorly drained mineral soils. This area encompasses no more than 5% of this map unit.

Additional Notes:

The organic layer of this soil ranged from 8 to 16 inches in thickness.

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 546B / P

Map Unit Name: Walpole sandy loam, 0-8% slopes

Landscape Settings: This soil type is found in the concave and nearly level areas of the property.

Surface Features: The areas with this soil type comprise ____ of the wetland areas found on this property.

Drainage Class: Poorly Drained

Parent Material: Very deep, sandy soils formed in water-sorted glacial outwash and stratified drift.

Complex: Yes ( ) No (√)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Areas of dissimilar inclusions consist of small areas where the depth to the seasonal high water is 12 to 15 inches in depth. This area encompasses no more than 5% of this map unit.

Additional Notes:

This poorly drained soil map unit borders the very poorly drained Scarboro series of the wetland drainage that runs through the site. Other areas with this soil type include the drainage ways that run along side of the paved road.

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: **699C**

Map Unit Name: Urban Land, pavement, 8-15% slopes

Landscape Settings: This unit is basically the sloping section of the road.

Surface Features: Hot Top Pavement.

Drainage Class: Impervious Surface

Parent Material: Anthropogenic/Hot Top

Complex: Yes ( ) No (√)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

N/A

Additional Notes:

N/A

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 41B / Rk

Map Unit Name: Chatfield-Hollis-Rock Outcrop Complex, 0-8% slopes

Landscape Settings: This soil type is found dominantly at the highest points of the property.

Surface Features: The areas with this map unit exhibit moderately deep soils interspersed with shallow soils and areas of exposed bedrock.

Drainage Class: Well Drained

Parent Material: The Chatfield portion of this map unit has developed in 20 to 40 inches of glacial till overlying bedrock. The Hollis portion of this map unit has developed in a thin mantle of glacial till. The exposed bedrock areas are found scattered irregularly.

Complex: Yes (√) No ( )

This complex consists of approximately 40% Chatfield Series, 30% Hollis Series and 30% Exposed Bedrock.

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Areas of dissimilar inclusions consist of small areas where slopes are greater than 8%. This area encompasses no more than 5% of this map unit.

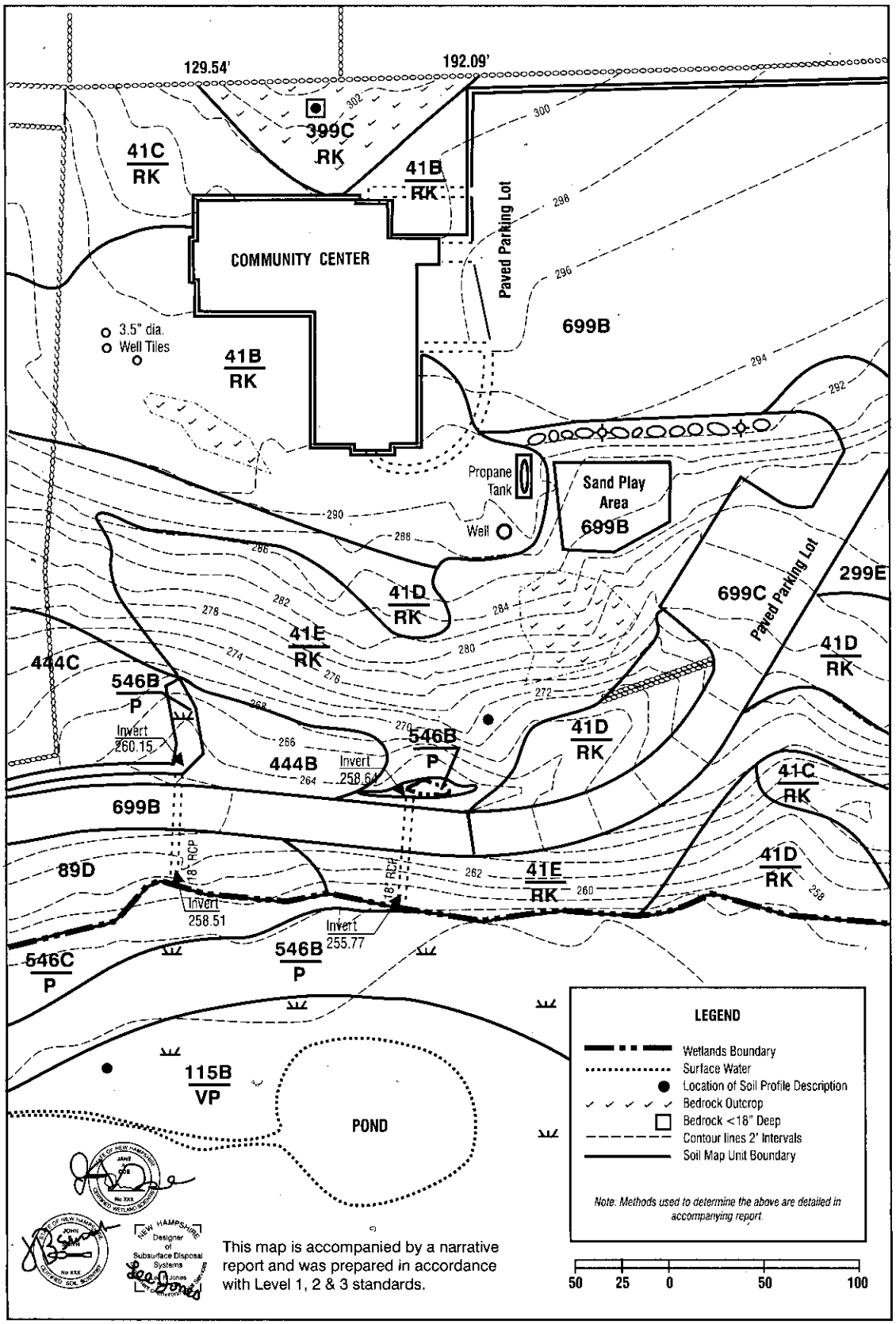
Additional Notes:

This soil complex is very variable due to the unpredictability of the undulating bedrock present in the area. Therefore some areas within this complex are bedrock controlled while other portions of this complex consist of moderately deep soils. The exposed areas of bedrock are irregularly scattered throughout this map unit.

SOIL GROUPINGS

Map Symbol	Map Unit	Soil Grouping
115	Scarboro	Group 6
546	Walpole	Group 5
699	Urban Land	Group 4
444	Newfields	Group 3
41	Chatfield/Hollis/Rock Outcrop	Group 4

Figure 6. Schematic Diagram of a Final Plan



V. Related Issues

In addition to the recommended information requirements outlined in the previous sections, three related issues deserve attention by municipalities. The first involves local regulations which determine lot sizes by soil types and the second addresses the variability of soil map units.

Application of Lot Size Calculations

In some cases, a municipality may be requiring large lots with the mistaken idea that a larger minimum lot size preserves open space. However ,a large minimum lot size uses more acreage for a given number of housing units than does a smaller minimum or zoning that allows cluster development. The effect of large lot requirements is more rapid conversion of open space to residential uses as population growth increases housing demand.

In order to ensure that subsurface wastewater treatment systems function properly, many municipalities require that lot sizes are based on soil type. In these cases, a minimum lot size is typically required in the zoning ordinance with a reference to the subdivision regulations where additional area requirements are specified depending on soil characteristics.

The committee recommends that municipalities revise their local soil based lot size regulations to be consistent with NHDES' requirements according to RSA 485-A and Env-Ws 1000. NHDES will be revising their lot size tables to reflect the use of USDA/NRCS and site specific soil mapping standards. This will help to avoid confusion and provide for consistency of the regulatory requirements at the State and local levels. The tables used to determine the lot sizes by soil type often differ from one municipality to another, as well as from those required by NHDES for subdivision approval.

Variability of Soil Map Units

All maps and plots of areas on the earth's surface represent, at best, only an approximation of what is actually there. This is true regardless of what mapping scale or mapping standard is used. This truism applies to soil maps, as well. All soil map units contain inclusions of soils other than those used to name the map unit. These inclusions are expected and are described in the map unit description.

The exact extent of inclusions and their location within a map unit are nearly impossible to determine without spending an inordinate amount of time and expense on extremely small parcels of land. This characteristic of soils, however, does not detract from the usefulness of soils information for making informed land use decisions.

In order to adequately handle the natural variability of soil map units, soil mapping standards have been developed that require specific levels of purity based on the nature of the unmappable inclusions. These inclusions are identified in the map unit description, along with statements explaining their potential impact on use and management. Local regulatory board members should be familiar with reading soil maps and understand the nature of included soils and how their properties may affect a proposed land use.

It is also important to understand the placement of soil lines on a base map. Soil boundaries represent a transition in soil behavioral characteristics and do not necessarily represent the exact point on the landscape where a particular soil type suddenly changes to another. The variable width of this transitional area is particularly important to remember when determining the exact number of lots that will be allowed in a proposed subdivision, using soil-based lot size computations. For this reason, it may be desirable for a planning board to request the assistance of a soil scientist to review applications where significant questions about the soils have been raised.

VI. Sources and References

Chapter Env-Ws 415 of the NH Code of Administrative Rules - Permits for RSA 485-A:17 Activities, February, 1996

These are the State's administrative rules for significant alteration of terrain, involving earth disturbances greater than 100,000 square feet. The requirements are for stormwater management and erosion and sediment control. This threshold drops to 50,000 square feet within 250' of the shoreline of protected waters.

Department of Environmental Services (DES)
Public Information and Permitting
PO Box 95
Concord, NH 03301-0095
(603) 271-2975

Chapter Env-Ws 1000 of the NH Code Of Administrative Rules - Subdivision and Individual Sewage Disposal System Design Rules, February, 1997 (Currently Undergoing Revision)

These are the State's administrative rules for septic system design and permitting. By adopting these standards local consistency can be assured between State and local permitting processes. NHDES will continue to update these regulations as new developments in science and technology occur.

Department of Environmental Services (DES)
Public Information and Permitting
PO Box 95
Concord, NH 03301-0095
(603)271-2975

Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, 1987.

In combination with the regional field indicators of hydric soil, this manual is consistent with the NHDES Wetlands Bureau's administrative rules, Wt 100-800. The Corps Manual can be cited as one of the on-site wetland mapping standards in local subdivision and site plan review regulations.

US Department of the Army
Waterways Experiment Station, Corps of Engineers
PO Box 631
Vicksburg, MI 39180-0631

The Corps Manual can be downloaded over the Internet from the following address:
www.wes.army.mil/el/wetlands/pdfs/wlman87.pdf

Field Book for Describing and Sampling Soils: Version 1.1 National Soil Survey Center, NRCS, 1998.

This document summarizes the current National Cooperative Soil Survey's convention for describing soils. It describes instructions, concepts and codes in a field guide for making or reading soil profile descriptions as currently practiced in the United States.

The Field Book can be downloaded over the Internet from the following address:
www.statlab.iastate.edu/soils/nssc/field_gd/field_gd.htm

Field Indicators for Identifying Hydric Soils in New England, Version 2, New England Interstate Water Pollution Control Commission, 1998.

These field indicators of hydric soils were developed by an Interstate group of professionals, specifically to address New England soil conditions and landscapes. In combination with the 1987 Army Corps of Engineers Wetlands delineation manual, they are consistent with the Wetlands Bureau's administrative rules, Wt 100-800. They can be cited as one of the on-site wetland mapping standards in the local subdivision and site plan review regulations.

New England Interstate Water Pollution Control Commission (NEIWPCC)
Boott Mills South
Foot of John Street
Lowell, MA 01852-1102

Keys to Soil Taxonomy, Eighth Edition, USDA/NRCS,1998.

This document summarizes the current National Cooperative Soil Survey's convention for classifying soils as currently practiced in the United States.

The Keys to Soil Taxonomy can be downloaded over the Internet from the following address:
www.statlab.iastate.edu/soils/keytax/keystosoiltaxonomy1998.pdf

Site Specific Soil Mapping Standards for New Hampshire and Vermont, Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999, or most recent revision.

This recent publication was prepared by the Society of Soil Scientists of Northern New England (SSSNNE) to supersede SSSNNE Publications No. 1 and 2, the HIS and Order 1 mapping standards, respectively. These standards result in multi-purpose map products that can be used for a number of land use purposes, including lot sizes. They can be adopted as site specific soil mapping standards as part of the local subdivision and site plan review regulations. They are consistent with the standards of the National Cooperative Soil Survey, which many local zoning ordinances are based upon.

Soil Science Society of Northern New England (SSSNNE)
PO Box 98
Durham, NH 03824-0098

Soil Manual for Site Evaluation in New Hampshire, 2nd Edition DES, 1991.

This publication was prepared by DES in cooperation with the NRCS to provide permitted designers and installers with guidance for use in doing site evaluations for the permitting of subsurface wastewater treatment systems. It is an easy to understand basic primer on soils and site evaluation.

Department of Environmental Services (DES)
Public Information and Permitting
PO Box 95
Concord, NH 03301-0095
(603)271-2975

Stormwater Management and Erosion and Sediment Control for Urban and Developing Areas in New Hampshire, DES., RCCD, 1992.

This document contains technical standards for stormwater management in developing urbanized areas. They are consistent with the site specific standards required by DES for significant alteration of terrain in accordance with RSA 485-A:17.

Department of Environmental Services (DES)
Public Information and Permitting
PO Box 95
Concord, NH 03301-0095
(603)271-2975

VII. List of Methods and Standards to be Used, by Review Level

LEVEL 1: DELINEATION OF WETLANDS AND SURFACE WATERS

- Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, Environmental Laboratory, Department of the Army, 1987.
- Field Indicators for Identifying Hydric Soils in New England, Version 2, New England Interstate Water Pollution Control Commission, 1998.
- Chapters Wt 100-800 of the NH Code Of Administrative Rules, April 21, 1997.
- RSA 485 - A:2, XIV, NH Safe Drinking Water Act

LEVEL 2: CONFIRMATION OF COUNTY SOIL SURVEY MAPS AND IDENTIFICATION OF LIMITING SOIL FEATURES

Step A

- Data Requirements for Site Review: Guidance for Planning Boards, Appendix 1, OSP, 1999.

Step B

- Field Book for Describing and Sampling Soils: Version 1.1 National Soil Survey Center, NRCS, 1998. (To replace the dated, 1991 Soil Manual for Site Evaluation in New Hampshire, 2nd Edition).
- NRCS Official Series Description Sheets and/or published map unit descriptions USDA/NRCS
- Keys to Soil Taxonomy, Eighth Edition, USDA/NRCS, 1998.
- Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999.

Step C

- Data Requirements for Site Review: Guidance for Planning Boards, Appendix 2, OSP, 1999.
- Keys to Soil Taxonomy, Eighth Edition, USDA/NRCS 1998.
- Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3.

LEVEL 3: SITE SPECIFIC SOIL MAPPING STANDARDS (SSSMS) MAP

- Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999.

APPENDIX 1.

SOIL COMPLEXES WITH DRAMATICALLY DIFFERENT CHARACTERISTICS

The following map units represent soil complexes currently recognized in the USDA, Natural Resources Conservation Service, Numerical State-Wide Soils Legend for New Hampshire. These are Order 2 soil map units commonly used in county soil surveys because the scale of mapping and the intricate pattern of the soil components do not allow for these soils to be recognized and mapped separately. The individual components of these map units are significantly different in their behavioral characteristics such that they warrant different land use interpretations. Except in unusual situations, the soil components can be separated and delineated using site-specific soil mapping standards and the applicant must provide Level 3 information whenever one of these map units occur on the property in question. Map units are listed in alphabetical order according to the predominant component.

Soil associations are not listed in this table. Soil associations are complexes of different soils recognized at the Order 3 level of mapping detail. The minimum size delineation in Order 3 mapping is fifty to several hundred acres in size. The subsequent level of mapping detail is not suitable for making the land-use decisions upon which this guidance document is based.

Map Symbol	Map Unit Name
149	Acton and Acton firm substratum, very stony
148	Acton and Acton firm substratum
290	Acton Variant-Lyman Variant complex
771	Berkshire and Mondnock soils, extremely bouldery
365	Berkshire and Mondnock soils, extremely stony
364	Berkshire and Mondnock soils, very stony
273	Berkshire-Monadnock, and Hermon soils, extremely bouldery
890	Bice-Millsite complex, very stony
162	Canaan-Berkshire complex, very stony
51	Canaan-Hermon complex, extremely rocky
50	Canaan-Hermon complex, very rocky
842	Canaan-Rock outcrop-Redstone complex
360	Cardigan-Kearsarge complex
361	Cardigan-Kearsarge-Rock outcrop complex
178	Charlton-Chatfield complex
256	Chatfield-Canton complex
257	Chatfield-Canton complex, extremely rocky
258	Chatfield-Canton complex, very rocky
40	Chatfield-Hollis complex
140	Chatfield-Hollis-Canton complex, very stony
250	Chatfield-Hollis-Montauk complex, very stony
41	Chatfield-Hollis-Rock outcrop complex
135	Chatfield Variant-Newfields complex
870	Elliotsville-Monson complex, very stony
833	Glebe-Saddleback-Sisk complex, very stony

660	Hollis-Bernardston complex
661	Hollis-Bernardston-Rock outcrop complex
82	Hollis-Canton complex
186	Hollis-Canton complex, extremely rocky
185	Hollis-Canton complex, very rocky
83	Hollis-Canton-Rock outcrop complex
174	Hollis-Charlton complex
179	Hollis-Charlton complex, extremely rocky
175	Hollis-Charlton complex, very rocky
176	Hollis-Charlton-Rock outcrop complex
693	Hollis-Charlton-Urban land complex
184	Hollis-Chatfield complex
120	Hollis-Gloucester complex
122	Hollis-Gloucester complex, extremely rocky
121	Hollis-Gloucester complex, very rocky
141	Hollis-Rock outcrop-Chatfield complex
362	Kearsarge-Cardigan Rock outcrop complex
891	Lanesboro-Macomber complex, very stony
548	Leicester-Ridgebury complex, very stony
544	Leicester-Walpole complex
545	Leicester-Walpole complex, very stony
260	Lombard-Tunbridge complex
461	Lyman Variant-Tunbridge Variant-Rock outcrop complex
70	Lyman-Berkshire complex
270	Lyman-Berkshire complex, extremely rocky
170	Lyman-Berkshire complex, very rocky
71	Lyman-Berkshire-Rock outcrop complex
52	Lyman-Hermon complex
152	Lyman-Hermon complex, extremely rocky
151	Lyman-Hermon complex, very rocky
53	Lyman-Hermon-Rock outcrop complex
920	Lyman-Marlow-Rock outcrop complex
187	Lyman-Mondanock complex, extremely rocky
188	Lyman-Monadnock-complex, very rocky
171	Lyman-Monadnock-Rock outcrop complex
271	Lyman-Rock outcrop-Berkshire complex
153	Lyman-Rock outcrop-Hermon complex
161	Lyman-Tunbridge-Rock outcrop complex
346	Lyme and Moosilauke soils
347	Lyme and Moosilauke soils, very stony
267	Lyme-Moosilauke complex
248	Lyme-Moosilauke complex, very stony
249	Lyme-Pillsbury complex, very stony

254	Monadnock and Hermon soils
255	Monadnock and Hermon soils, very stony
80	Monadnock-Lyman complex, very stony
81	Monadnock-Lyman-Rock outcrop complex
25	Ninigret-Windsor complex
181	Paxton-Chatfield complex
312	Quonset-Warwick complex
837	Ricker-Rock outcrop complex
826	Ricker-Rock outcrop-Saddleback complex
836	Saddleback-Glebe-Ricker complex, very stony
805	Saddleback-Houghtonville-Rock outcrop complex
650	Saddleback-Ricker complex, very stony
807	Saddleback-Rock outcrop-Houghtonville complex
446	Scituate-Newsfields complex
447	Scituate-Newfields complex, very stony
138	Shapleigh-Gloucester complex, extremely rocky
137	Shapleigh-Gloucester complex, very rocky
136	Shapleigh-Gloucester complex
480	Tunbridge Variant-Lyman Variant-Henniker complex, very stony
370	Tunbridge-Berkshire complex
60	Tunbridge-Berkshire complex, very stony
670	Tunbridge-Berkshire-Lyman complex
90	Tunbridge-Lyman complex
380	Tunbridge-Lyman-Becket complex, very stony
160	Tunbridge-Lyman-Monadnock complex, very stony
471	Tunbridge-Lyman-Ricker complex
61	Tunbridge-Lyman-Rock outcrop complex
472	Tunbridge-Marlow complex
470	Tunbridge-Peru complex
560	Tunbridge-Plaisted-Lyman complex
561	Tunbridge-Plaisted-Lyman complex, very stony
114	Walpole-Binghamville complex
311	Warwick-Quonset complex
420	Waumbek and Skerry soils
421	Waumbek and Skerry soils, very stony
562	Winnecook-Thorndike-Rock outcrop complex

Human Influenced Soils

Human influenced soils recognized in county soil surveys typically are characterized as having extremely variable and altered soil material such that interpretations cannot be adequately applied without on-site investigations. The applicant must provide Level 3 information whenever one of these map units occurs on the property in question.

Map Symbol	Map Unit Name
698	Dumps
600	Endoaquents, loamy
900	Endoaquents, sandy
302	Made land
298	Pits, gravel and borrow
398	Quarries
300	Udipsamments, nearly level
350	Udipsamments, wet substratum
550	Udorthents, bedrock substratum
500	Udorthents, loamy
200	Udorthents, refuse substratum
400	Udorthents, sandy
299	Udorthents, smoothed
100	Udorthents, wet substratum

Source: NRCS, 1999

APPENDIX 2.

DEFINITIONS OF LIMITING FEATURES

Bedrock within 18" of the soil surface: "Soil surface" refers to the top of the first mineral layer. The bedrock meets the definition of either lithic or paralithic material. At least 75 percent of delineated areas must meet this definition with no more than 15 percent of the area having soil properties more limiting (i.e., hydric conditions). (Site-Specific Soil Mapping Standards for New Hampshire and Vermont, SSSNNE Special Publication No.3, June 1999, pp 6-7)

Lithic material: Unaltered material that is continuous, coherent and indurated.* The material qualifies for an "R" designation as a master layer (USDA Soil Survey Manual, 1993, pg. 121). Plant and tree roots cannot enter except in cracks. Hand digging with a spade is impractical. Some lithic material can be ripped with heavy power equipment. The material must be in a strongly cemented or more cemented rupture-resistance class. Granite, quartzite and indurated * limestone or sandstone are examples. (Keys to Soil Taxonomy, Eighth Edition, 1998, pg.32)

* Indurated: said of a rock or soil hardened or consolidated by pressure, cementation or heat. (Dictionary of Geological Terms, Bates and Jackson, 1984.)

Paralithic material: Relatively unaltered material that have an extremely weakly cemented to moderately cemented rupture-resistance class. The material qualifies for a "Cr" designation as a subordinate distinction within a master soil layer (USDA Soil Survey Manual, 1993, pg. 124). Cementation or bulk density are such that plant and tree roots cannot enter except in cracks. The material can be hand dug with a spade with much difficulty. Commonly these materials consist of weathered or weakly consolidated bedrock. (Keys to Soil Taxonomy, Eighth Edition, 1998, pg.32)

Bedrock outcrop: Lithic or paralithic material exposed at the surface.

Steep slopes greater than 35 percent: At least 75 percent of delineated areas must meet this definition. (Site-Specific Soil Mapping Standards for New Hampshire and Vermont, SSSNNE Special Publication No.3, June 1997, pp 6-7)

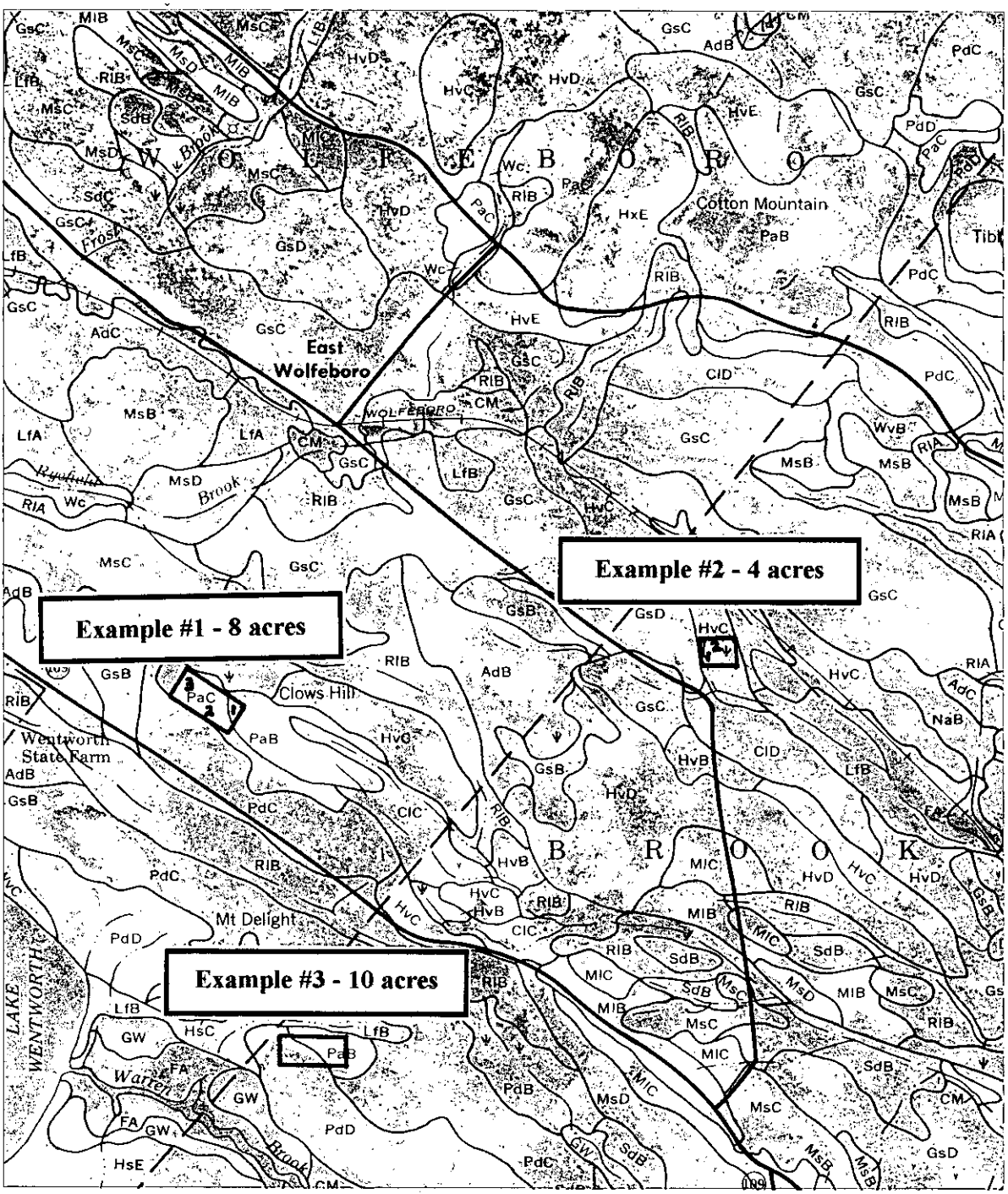
Very poorly drained soil:

Soils that are flooded daily by tides
Soils that have aquic conditions within the upper part **and**
have an organic surface layer greater than 16 " thick, **or**
Have an organic surface layer 8" to 16" thick **and**
are directly underlain by a depleted or gleyed matrix.
Have an organic surface layer 4" to 8" thick, **or**
a mucky A or Ap horizon **and**
are directly underlain by a depleted or gleyed matrix
Do not have a spodic horizon; dominant texture in upper 20" is loamy fine sand or coarser **and**
have an organic surface layer 4" to 8" thick, or mucky A or Ap directly underlain with
5 percent or more redox features.

Sources: Keys to Soil Taxonomy, Eighth Edition, 1998; Site Specific Soil Mapping Standards for New Hampshire and Vermont, Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999, or most recent revision.

Appendix 3.

THREE EXAMPLES OF SUGGESTED DOCUMENTATION FOR NRCS MAP CONFIRMATION



Example #1. Proposed Subdivision of 8 Acres

Soil map units on the NRCS soil survey:

PaB – Paxton fine sandy loam, 3 to 8 percent slopes

PaC – Paxton fine sandy loam, 8 to 15 percent slopes

Summary Report:

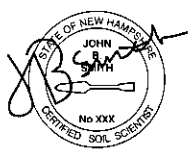
The NRCS published soil survey and supporting soil series description describes this 8 acre parcel as being comprised of very deep, well drained loamy glacial till with a hardpan occurring about 40 inches. A perched watertable occurs above the hardpan for brief periods of time. Slopes range from 3 to 15 percent.

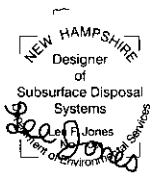
Three soil descriptions were completed on the parcel. One in the PaB map unit and two in the PaC map unit. Based on three soil descriptions, the NRCS published soil survey adequately reflects the nature and properties of the soils on the site. Indications of a perched watertable were not observed in locations #1 and #3, and the observations indicate the depth to hardpan, in some areas, is slightly below the range allowed for the Paxton Series. These features, however, do not impact on the intended use and management of the parcel.

The soils were not described below a reasonable depth after reaching the hard pan. There is no bedrock mapped, observed or expected in the immediate area and deeper investigations were deemed to be unnecessary to adequately describe the nature and properties of the soils within the parcel.

Based on the soil observations made, the NRCS soil survey adequately represents the area for the intended use and a site-specific soil survey is not warranted.

Date
Signature and Seal





(Total estimated time, on-site, to conduct soil investigations and write narrative report: 2 hours)

SOIL DESCRIPTION #1

Horizon	Depth	Matrix Color	Percent Redox	Texture	Consistence	Permeability	Comments
Ap	0-7"	10yr3/3		fsl	friable	moderate l	
Bw1	7-24"	2.5y4/4		fsl	very firm	moderate	
Cd	24-30"	5Y5/3		grfsl	friable	slow	

Comparison of Soil Characteristics:

	Slope	Drainage	SHWT & Type	Textures	Depth to Restrictive Feature	Comments
As described in soils report and/or OSD:	3-8%	Well Drained	18-40 inches; perched	Loamy	Hardpan at 18 to 40 inches	
As observed in test pit log:	3%	Well Drained	None observed	Loamy	Hardpan observed at 24 inches	Test pit supports soil as mapped; no evidence of a SHWT

SOIL DESCRIPTION #2:

Horizon	Depth	Matrix Color	Percent Redox	Texture	Consistence	Permeability	Comments
Ap	0-5"	10yr3/1		fsl	friable	moderate l	
Bw1	5-15"	10YR5/4		fsl	friable	moderate	
Bw2	15-42"	2.5y4/4		Grfsl	friable	moderate	
Bw3	42-44"	2.5y4/4	5% 7.5yr5/6	grfsl	friable	moderate	
Cd	44-50"	5Y5/3	5% 7.5				Depth to hard pan outside range by 4"

Comparison of Soil Characteristics:

	Slope	Drainage	SHWT & Type	Textures	Depth to Restrictive Feature	Comments
As described in soils report and/or OSD:	15-25%	Well Drained	18-40 inches; perched	Loamy	Hardpan at 18 to 40 inches	
As observed in test pit log:	9%	Well Drained	42" perched	Loamy	Hardpan observed at 44 inches	Depth to hardpan and depth to shwt outside range.

SOIL DESCRIPTION #3

Horizon	Depth	Matrix Color	Percent Redox	Texture	Consistence	Permeability	Comments
A	0-2"	10yr3/3		fsl	friable	moderate l	
Bw1	2-20"	2.5y4/4		fsl	friable	moderate	
BW2	20-45"	5Y5/3		grfsl	friable	slow	
Cd	45-47"	5Y5/3		grfsl	very firm	very slow	Hardpan outside range by 5"

Comparison of Soil Characteristics:

	Slope	Drainage	SHWT & Type	Textures	Depth to Restrictive Feature	Comments
As described in soils report and/or OSD:	15-25%	Well Drained	18-40 inches; perched	Loamy	Hardpan at 18 to 40 inches	
As observed in test pit log:	18%	Well Drained	None observed	Loamy	Hardpan observed at 45 inches	Hardpan outside range by 5", no evidence of a SHWT

Example #2: Proposed Subdivision of 4 Acres

Soil map units on the NRCS soil survey:

HvC – Hollis-Charlton very rocky fine sandy loams, 8 to 15 percent slopes

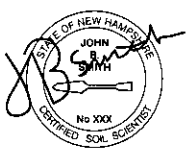
Summary Report:

The NRCS soil survey report describes this map unit as being a complex of shallow and deep soils overlying bedrock. Bedrock outcrops comprise as much as 25 percent of the area and deep soils can make up as much as 40 percent of the area. There is a wet spot int he northeast corner of the parcel that is represented by a special features symbol on the soil map.

Observations of bedrock outcropping were observed while traversing this parcel. Two soil descriptions were completed. One in an area of deep soils; the other in an area of poorly drained soils associated with the wet spot symbol. An area in the northeast corner of the parcel, indicated with the wet spot symbol, has already been delineated on the site plan as wetland. The wetland boundary, as shown on the site plan, may not necessarily represent the boundary of hydric soil.

Due to the observed nature and complexity of the soils within this 4 acre parcel, it is recommended that a site-specific soil survey be conducted.

Date
Signature and Seal





(Total estimated time, on-site, to conduct soil investigations and write narrative report: 1 hour)

SOIL DESCRIPTION #1

Horizon	Depth	Matrix Color	Percent Redox	Texture	Consistence	Permeability	Comments
A	0-2"	10yr3/3		fsl	friable	moderate l	
Bw1	2-20"	10yr5/4		fsl	friable	moderate	
Bw2	20-45"	2.5y4/4		grfsl	friable	moderate	
C1	45-47"	5Y5/3		l	friable	moderate	
C2	47-55"	5y5/3		l with ls lenses	friable to loose	moderately rapid	Stopped by large stone at 55"

Comparison of Soil Characteristics:

	Slope	Drainage	SHWT & Type	Textures	Depth to Restrictive Feature	Comments
As described in soils report and/or OSD: Hollis Component:	8-15%	Somewhat excessive	none	Loamy	Bedrock at 10 to 20 inches	
Charlton Component	8-15%	Well Drained	none	Loamy	None above 65"	Test pit supports soil as mapped; no evidence of a SHWT
As observed in test pit log:	12%	Well Drained	none observed	Loamy	None observed	Fits concept of the Charlton Series

SOIL DESCRIPTION #2:

Horizon	Depth	Matrix Color	Percent Redox	Texture	Consistence	Permeability	Comments
A	0-6"	10yr3/2		fsl	friable	moderate l	
Bw1	6-12"	10yr5/4	10yr5/2 7.5yr5/6	fsl	friable	moderate	
Bw2	12-22"	2.5y4/4	10yr5/2 10yr6/1 7.5yr5/6	grfsl	friable	moderate	Watertable observed at 20"
Cg1	22-35+	2.5y6/2	7.5yr5/6	l	friable		

Comparison of Soil Characteristics: None

Soil Description taken in vicinity of special features symbol.

Example #3. Proposed Subdivision of 10 Acres

Soil map units on the NRCS soil survey:

PaB – Paxton fine sandy loam, 3 to 8 percent slopes

PdD – Paxton very stony fine sandy loam, 15 to 25 percent slopes

Summary Report:

The NRCS published soil survey and supporting soil series descriptions, describes this 10 acre parcel as being comprised of very deep, well drained loamy glacial till with a hardpan occurring above 40 inches. A perched water table occurs above the hardpan for brief periods of time. Slopes range from 3 to 25 percent.

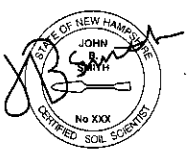
During the site visit an area was observed within the open field, located in the western half of the parcel, that can be characterized as having slopes of 8 to 15 percent. This is a mappable area at the scale of the subdivision plan and represents a new soil delineation, this area should be identified for proper soil based lot size calculation.

Because a new soil map unit must be recognized, subsequently altering existing soil lines on the county soil survey, a site-specific soil survey is warranted.

No soil descriptions were taken during this on-site review.

Date

Signature and Seal





(Total estimated time, on-site, to conduct soil investigations and write narrative report: ½ hour)

OFFICE OF STATE PLANNING
STATE OF NEW HAMPSHIRE
2 ½ BEACON STREET – CONCORD 03301-4497
TELEPHONE: 603-271-2155
FAX: 603-271-1728

March 6, 2000

The Honorable Chairman Robert S. Mercer
House Executive Departments and Administration
Room 202 LOB
North State Street
Concord NH 03301

Dear Honorable Chairman Mercer:

I would like to take this opportunity to comment on the proposed SB 181, relative to licensure of geologists. The legislative hearing on this bill will be held by your Committee at 10:00 on March 8, 2000. OSP would like to go on record as being in support of the proposed bill, for the following reasons.

1. SB 181 would establish a licensing program for professional geologists. The intent of the program is to protect the interests of municipalities and the general public by requiring that professional geologists demonstrate that they are of ethical character and posses the technical proficiency and qualifications required to practice the profession of geology.

According to OSP's records for 1999, 63 or 26% of New Hampshire municipalities have enacted some form of aquifer protection ordinance. Most of these ordinances require some type of on-site investigation to characterize the nature and extent of aquifer and groundwater resources. The new certification program for professional geologists will improve the quality of informed land use decisions made by local planning boards based upon geologic based aquifer information.

2. The recent guidance documents entitled Data Requirements for Site Review: Guidance for Planning Boards DES and OSP, 1999 and Model Requirements for Soils and Wetlands Data in Subdivision (Site Plan Review) Regulations OSP, 1999 would require that wetlands, surface waters and soils be either delineated or characterized by professionals that are either a certified wetland scientist or soil scientist under RSA 310-A or a permitted septic designer under RSA 310-A:79, IV, Env-Ws 1000 and RSA 485-A. This assures the planning board that the natural resource information required for subdivision and site plan review is prepared by qualified individuals.

Establishment of a licensure program for professional geologists would provide a comparable assurance for municipalities that implement a local aquifer protection ordinance.

Thank you for the opportunity to comment on SB 181. If you have any questions regarding this testimony, please feel free to contact either me or Francesca Latawiec of my staff at 271-2155. We would also be happy to provide technical assistance to the ED&A Committee in any further discussions on this bill.

Sincerely,

Jeffrey H. Taylor
Director

fl:jlm
cc: Robert W. Varney, Commissioner, DES

New Hampshire Association of Natural Resource Scientists

March 7, 2000

The Honorable Chairman Robert S. Mercer
House Executive Departments & Administration
Legislative Office Building, Room 202
33 North State Street
Concord, NH 03301

Re: Senate Bill 181

Dear Chairman Mercer:

The New Hampshire Association of Natural Resource Scientists (NHANRS), an entity of professional natural resource scientist experts within the Granite State, supports the licensing of professional geologists and inclusion within the NH Joint Board.

Geologists offer many disciplined professional services that would assist the urban and rural planning in our state and, we trust, will enhance the well being of our citizens. To reiterate, NHANRS is in support of the proposed SB 181 before your committee.

Sincerely,

Michael Parsont for

Bruce A. Gilday
NHANRS President

cc: Michael Parsont, NHANRS Legislative Director
Teresa Rosenberger, McLane Law Firm

Post Office Box 110 Concord, NH 03302

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Water Resources Division
New Hampshire-Vermont District
361 Commerce Way
Pembroke, NH 03275

September 30, 1999

The Honorable Burton J. Cohen, Chair
Senate Executive Departments & Administration
Legislative Office Building, Room 101
Concord, NH 03301

Subject: Senate Bill 181-FN relative to the licensure of geologists

Dear Senator Cohen:

I am writing in reference to SB 181-FN (as amended), which would establish a Board of Professional Geologists and authorize the regulation of the practice, examination, licensure, and discipline of professional geologists in the State of New Hampshire.

The U. S. Geological Survey is a world leader in the natural sciences, with a mission of providing the Nation with information to: understand the Earth; mitigate losses from natural disasters; manage water, biological, energy and mineral resources; and enhance our quality of life. The New Hampshire/Vermont District Office of the USGS is located in Pembroke and works cooperatively with state agencies on a number of projects related to this mission. Most of our investigative programs in this State are conducted in cooperation with the Department of Environmental Services and focus primarily on surface-water and ground-water resources.

While our office employs many geologists, we also make significant use of geologic data collected by other professionals who have practiced, or are currently practicing geology in the State. Our Agency must remain neutral on the issue of licensing. However, we recognize that reliable geologic data and interpretation provide a keystone to our work. High professional standards of those practicing geology in this State will contribute to the quality of products which are used to ensure the public health, safety and welfare.

Sincerely,

Brian R. Mrazik
District Chief

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

LEON S. KENISON
COMMISSIONER

September 23, 1999

Senator Burton Cohen , Chairman
Executive Department and Administration Committee
Room 302 , Legislative Office Building
Concord, NH 03301

RE: LICENSURE OF GEOLOGISTS

Dear Senator Cohen:

The Department of Transportation supports the licensure of professional geologists in New Hampshire. The NHDOT depends on accurate and detailed geological information to design and maintain a safe transportation infrastructure. Geological information is used extensively in the design of bridges and roads, is important in planning activities and is critical to the assessment of environmental concerns.

Passage of this bill will ensure that the application of geologic principles in the practice of geology will continue in a manner protective of health, safety and welfare of the public. It is our hope that this legislation will receive favorable consideration.

Sincerely,

Carol A. Murray, P.E.
Assistant Commissioner

JOHN O. MORTON BUILDING - 1 HAZEN DRIVE - P.O. BOX 483 - CONCORD, N.H. 03302-0483
TELEPHONE: 603-271-3734 FAX: 603-271-3914 TDD ACCESS: RELAY NH 1-800-735-2964

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-3503 FAX (603) 271-5171

October 5, 1999

The Honorable Burton J. Cohen, Chair
Senate Executive Departments & Administration
Legislative Office Building, Room 101
Concord, New Hampshire 03301

Re: Senate Bill 181-FN in re: Licensure of Geologists

Dear Senator Cohen:

We are grateful for the opportunity to express our support for SB 181-FN. This letter has been prepared in coordination with that of Commissioner Robert W. Varney to you also dated October 5, 1999. Both of us have been part of the process of preparation of the draft bill as members of the Board of Advisors of the N.H. Council of Professional Geologists.

We are steadfast in our recommendation that the process of licensure of geologists is the only effective means of assuring the protection and welfare of the public in decisions related to the geologic substrate of the State, and most particularly in the analysis of water and mineral reserves, transportation corridor planning, and environmental remediation and protection. The bill is especially attractive because the associated administrative costs are fully offset by the license fees, and no additional costs to the State will occur.

We are available to respond to any questions that you may have (603/271-6482 or 603/527-0006). Thank you for providing us this opportunity.

Sincerely,

Eugene C. Boudette
N.H. State Geologist
N.H. Department of Environmental Services

Brian K. Fowler, Chairman
Geologic Resources Advisory Committee

CC: The Honorable Sheila Roberge
The Honorable Francine Wendelboe
Ms. Dorothy Richter, President, Hagar-Richter Geoscience, Inc.

New Hampshire

Geologic Mapping

On September 30, 1998, representatives of the U.S. Geological Survey (USGS) joined the Commissioner of the New Hampshire Department of Environmental Services (NHDES), and the New Hampshire State Geologist as they presented Governor Jeanne Shaheen with the recently published Bedrock Geologic Map of New Hampshire (fig. 1). This map was published by the USGS, in cooperation with the State of New Hampshire and the Department of Energy. USGS scientists participated in the geologic fieldwork and preparation of the map.

As part of a bedrock aquifer assessment project, USGS geologists completed bedrock geologic maps of two 1:24,000-scale quadrangles in southern New Hampshire to determine if there is a correlation between rock type and the ground-water yields from wells drilled in these areas. The value of bedrock geologic maps for exploration of ground water in fractured bedrock in New England is being investigated.

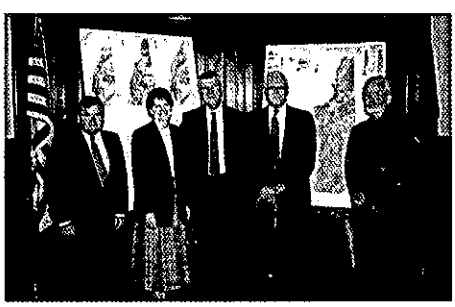


Figure 1. The bedrock geologic map of New Hampshire is presented to Governor Jeanne Shaheen by representatives from the USGS and the NHDES.

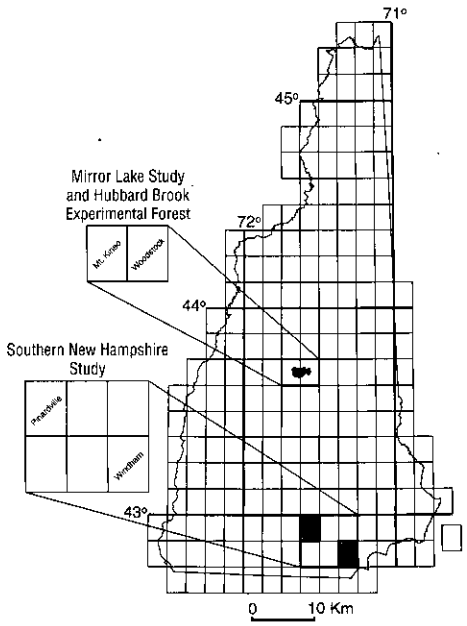


Figure 2. Index map of the Bedrock Regional Aquifer Study area in southern New Hampshire and at Mirror Lake, Grafton county, in west-central New Hampshire.

The USGS also is making a detailed bedrock geologic map of the Hubbard Brook watershed, a long-term research area of the U.S. Forest Service (USFS) in central New Hampshire and at the nearby Mirror Lake fractured bedrock research site (fig. 2). The geologic map data will be compared to subsurface bedrock structures observed in the two well fields at Mirror Lake to determine how well the subsurface structures characterize larger areas.

Detailed mapping of surficial geology by the USGS, in cooperation with the New Hampshire Department of Resources and Economic Development and NHDES, has continued for the last 10 years. About 30 percent of the State has been mapped and a variety of map products that show the distribution of sand, gravel, silt, clay, and till (unsorted sand, gravel, silt, and clay) are available. This mapping is supported by an external source of funding for the National Cooperative Geologic Mapping Program. The USGS program comprises a wide variety of economic and environmental issues by supporting geologic mapping projects in New Hampshire. These issues include forecasting resource management in the sand and gravel industry, ground-water management, transportation engineering, and environmental remediation.

Ground-Water Resources

Many towns and communities in New Hampshire have limited or no sand and gravel aquifers that can support high-yielding water wells. These towns must rely on surface-water sources or locate and drill high-yielding zones within fractured bedrock. Typically, bedrock wells provide low yields, but the USGS, in cooperation with the NHDES, is investigating methods of locating high-yielding zones in bedrock.

In New England, bedrock initially was fractured more than 90 million years ago when stresses in the earth folded and cracked the rock. The weathering has since produced surface patterns, that could indicate the location of underlying large fractures. Some of these fractures could act as pathways for ground-water flow that, when intercepted by drilled wells, have the potential of yielding large quantities of ground water for public supply. A series of

maps showing the location of these surface patterns statewide was produced by the New Hampshire Bedrock Aquifer Assessment project.

As part of this project, the USGS, in cooperation with the NHDES, is comparing the quality of well water with the type of rock in which wells were drilled. More than 20,000 wells drilled in New Hampshire since 1982 were geographically located and a total of 1,353 bedrock wells were matched with 1,818 water-quality samples. These correlations will be used to assess the probable chemical character of water withdrawn from various rock types throughout the State. Chemical constituents of the bedrock aquifers are being mapped and analyzed in collaboration with the New England Coastal Basins National Water-Quality Assessment (NAWQA) Program.

A better understanding of the sources and processes of water flow through fractures in crystalline bedrock is needed to protect existing water supplies and to locate high-yielding sources of water. New methods for these purposes are being investigated by the USGS. Advanced geophysical techniques (such as borehole radar) were used to locate the nature and extent of fractures in bedrock in the towns of Seabrook and Rye, and at the USGS Mirror Lake fractured-bedrock research site near Thornton.

The USGS is assessing new methods for collecting high-resolution digital images of rocks and fractures below the surface. A new borehole-camera technique can obtain digital video images of the inside of a well above and below the water surface. The camera captures an image of the borehole wall (fig. 3). The images provide data that can be used to describe the rock type(s) and fractures in the boreholes, identify on-site contamination, and aid in planning for the collection and interpretation of other geophysical data.

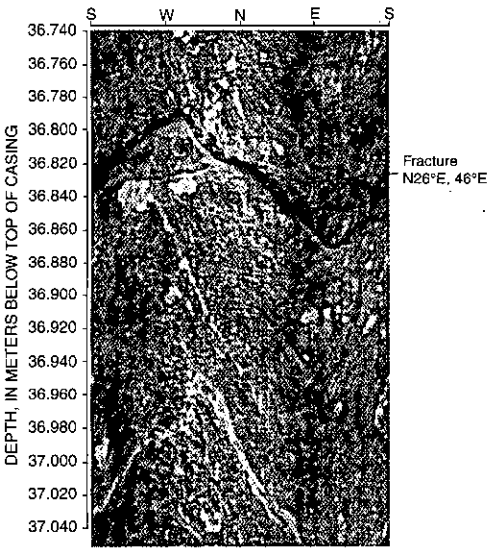


Figure 3. A digital optical image that represents an "unrolled" 360-degree scan of the borehole wall.

Topographic Mapping

USGS topographic maps of New Hampshire's White Mountain National Forest are scheduled for revision in 1999. In an agreement between the USGS and the U.S. Forest Service (USFS), the USFS will update the maps to show additional features required for national forest management. The source images for these map revisions are digital orthophoto quadrangles (DOQ's) that were produced from aerial photographs taken from 1992 through 1994. These DOQ's of the White Mountain National Forest are available to the public from the USGS.

As part of the National Aerial Photography Program (NAPP), the USGS obtained new black-and-white aerial photographs of southern New Hampshire in the spring of 1998. The collection of photographs for the remainder of the State is scheduled for 1999. NAPP photographs also are available to the public through the USGS.

Many of the New Hampshire 1:24,000-scale and 1:25,000-scale topographic maps are scheduled to be revised during the next several years. The USGS plans to work with State and Federal agencies and Earth Science Corps volunteers to improve map content.

Biological Diversity

An important issue in the northeastern United States is how best to allocate limited resources for land conservation to maintain diverse plant and animal populations. In New Hampshire, USGS scientists are constructing computer-based models to predict distributions of vertebrates and to determine the degree of protection through land conservation that is needed for regions of high vertebrate diversity. Digital maps describing land-cover patterns, vertebrate species distributions, and conservation areas are being used as tools to help provide critically needed information on relations between the distribution of terrestrial vertebrates and habitats in the region. The results of the project may assist government officials and land managers in making sound decisions for land conservation. The work is being supported by the New Hampshire Fish and Game Department and the U.S. Fish and Wildlife Service.

Water Quality

In 1991, the USGS began the NAWQA Program to describe the quality of the Nation's water resources, and to identify the natural and manmade factors that affect it. The program provides information that is useful to water-resource policymakers and managers at National, State, and local levels. Parts of central and eastern New Hampshire are included in the 22,900-square-mile New England Coastal Basins NAWQA study area, which also encompasses western and central Maine, eastern Massachusetts, and most of Rhode Island. In New

Hampshire, this area includes the drainage basins of the Merrimack, Androscoggin, and Saco Rivers, as well as the smaller coastal drainage basins. A 3-year effort of intensive field-data collection began in 1998 with the collection of streambed sediment, fish tissue, and water samples. The amount of nutrients flowing to coastal waters from the major rivers in eastern New England and the influence of various levels of urbanization on water quality in streams and aquifers and on stream ecology will be assessed by this monitoring.

As part of the effort, existing ground-water-quality data were analyzed to determine if concentrations of arsenic in ground water—at levels of concern to public health—are related to regional geology. The USGS compared arsenic data from 800 public-supply wells in eastern New England and found that arsenic was present in more than 46 percent of wells drilled in metamorphic rocks that contain appreciable amounts of calcium carbonate. In contrast, arsenic was detected in only 22 percent of wells drilled in other rock types (fig. 4). A better understanding of the potential effect of regional geology on ground-water quality will help water managers in siting wells that comply with U.S. Environmental Protection Agency (EPA) drinking-water standards.

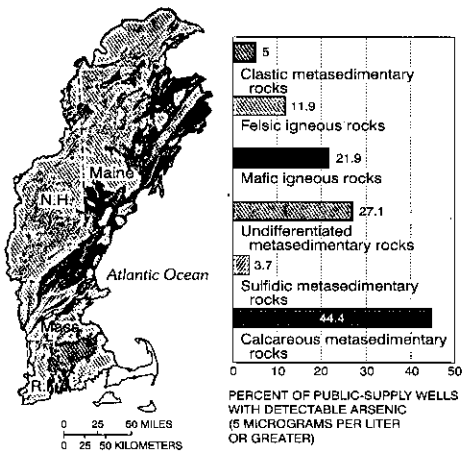


Figure 4. Types of rock with the percentage of wells where arsenic concentrations exceeded a detection limit of 5 micrograms per liter or greater in the New England Coastal Rivers Basin study area.

The USGS, in cooperation with the NHDES and the EPA, is studying the movement and degradation of chemical (tetrachloroethylene) contamination in parts of a glacial-drift river-valley aquifer in Milford (fig. 5). The aquifer is an important source of water for commercial and State fish hatcheries, supplying more than 2 million gallons of water per day (Mgal/d). Before the contamination was identified, the aquifer had supplied more than 1 Mgal/d to two municipal water-supply wells. Through extensive monitoring of contaminant levels and the modeling of ground-water flow, the USGS is providing information to the State and EPA to help assess and improve the design and operation of the remediation effort.

A new collaborative study between the USGS and the University of New Hampshire will examine the inflow of ground water, nutrients, and contaminants to the Great Bay Estuary in southeastern New Hampshire. Factors such as water use, land use, and ground-water flow affect the amount and quality of ground and surface water discharged to the Bay. The quantity and quality of ground water flowing into the Bay and the effects of this influx of fresh water on marine environments and ecosystems have not been studied previously. The study results will be used to determine the extent to which ground water is a factor in determining the overall water quality of this estuarine system.

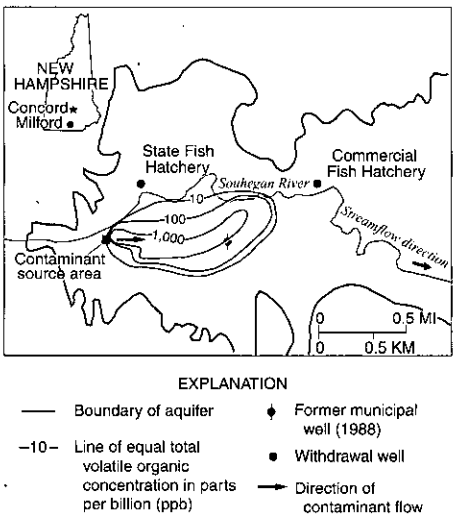


Figure 5. Aquifer boundary, ground-water withdrawal locations, and the extent of contaminant plume in Milford.

Water Information

The amount of water in New Hampshire's rivers, streams, lakes, and reservoirs is measured and monitored by the USGS hydrologic data-collection program. These data are used for

- forecasting floods and droughts
- flood warning and flood-plain management
- water-resources planning
- designing and operating projects for water supply, hydroelectric power, flood control, and pollution control
- designing bridges and culverts, and
- hydrologic research.

Long-term records are needed to evaluate the responses of hydrologic systems to natural climatic variations and human-induced stresses so that potential problems can be defined early and appropriate planning and management actions can be taken by local and State agencies. Streamflow monitoring also provides baseline

data on the flow characteristics of rivers and streams. In New Hampshire, surface-water data are collected (fig. 6) from a network of 52 stations, and a ground-water-monitoring network provides monthly water-level data for 28 wells. Records are published monthly and annually. The network is operated by the USGS, in cooperation with the NHDES, U.S. Army Corp of Engineers, several towns, municipalities, and utility companies.

Real-time streamflow data, by way of satellite and telephone telemetry, are available on the World Wide Web for 37 locations in New Hampshire at:

http://nh.water.usgs.gov

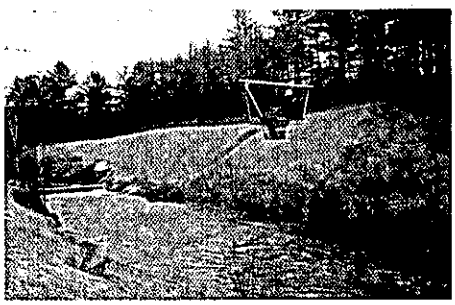


Figure 6. A technician is preparing to measure streamflow by lowering a current meter from a cable car suspended over a river in New Hampshire.

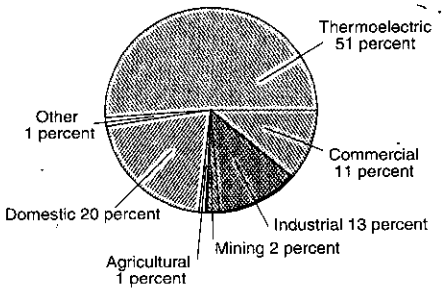
This real-time streamflow information is critical for the flood forecasting and response activities of the National Weather Service, the New Hampshire Office of Emergency Management, and other State and local officials.

Changing patterns in water use require that available supplies and demands be carefully evaluated. Without adequate information, decisionmakers are not equipped to address critical and competing demands related to water supply, hydropower, snowmaking, water quality, and the potential effects of streamflow withdrawals on ecosystems. In 1995, 450 million gallons of freshwater were used in New Hampshire (fig. 7).

The USGS, in cooperation with the NHDES, Water Division, is working to improve the State's water-use information. Completion of a statewide water-use data base is planned for 1999. This data base will include site-specific data, as well as compilations at the county and major drainage-basin levels. The data-base-management system permits water to be tracked from the point of withdrawal to the point of return into the environment. These water-use data will be available to Federal and State agencies, educators, consultants, and other organizations or individuals concerned with water resources.

Wildlife

A concern about the decline of the American woodcock during the last three decades across most of eastern North America has encouraged USGS scientists to study the demographics and habitat requirements of the popular game bird. In New Hampshire, the research is being carried out in cooperation with the U.S. Fish and Wildlife Service (USFWS), the New Hampshire Fish and Game Department, Dartmouth College, the Wildlife Management Institute, and the Ruffed Grouse Society. Two separate woodcock populations are recognized and managed by the USFWS. Both populations have dwindled since the early 1970's, with a greater drop in the eastern region (2.5 percent per year) than in the central region (1.6 percent per year). To understand how habitat modification is affecting the populations, USGS biologists are studying sources of mortality, survival rates, and patterns of woodcock movement and habitat use. Results of these studies will help management agencies set harvest regulations and identify beneficial forest management practices. The goal of the Federal American Woodcock Management Plan is to stabilize and increase woodcock populations to 1985 levels by the year 2005.

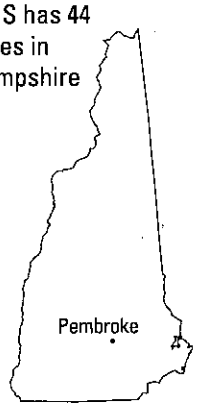


Total does not equal 100% due to rounding.

Figure 7. Total freshwater use by category in New Hampshire (1995).

USGS office locations

The USGS has 44 employees in New Hampshire



USGS State Representative

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Pembroke, NH 03275-3718
(603) 226-7800
FAX (603) 226-7894

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ACEC

September 21, 1999

Ms. Dorothy Richter, President
NH Council of Professional Geologists
c/o Hager-Richter Geoscience, Inc.
8 Industrial Way - D10
Salem, NH 03079

RE: SB-181 Relative to Licencing of Professional Geologists

Dear Dorothy:

Following the September 20, 1999 meeting of the Joint Working Group (JWG), please find an original copy of the final Memorandum of Understanding (MOU) as finalized at the meeting.

As discussed, the MOU has been finalized based on added language to the draft bill in the definitions section (RSA-310-A:118, paragraph V), updating the previous draft bill dated 9/3/99. It is understood that the MOU will be distributed with the revised draft bill (dated 9/20/99), and the NHCPG memorandum dated June 3, 1999 either as attachments or by reference.

The work of the JWG has been challenging. I believe I can speak for the professional engineers involved in the process in expressing satisfaction with the outcome to date, as the legislative process may move forward from here.

Should you have any questions, please do not hesitate to call.

Very truly yours,

William A. Straub, P.E.
Past President, CENH

WAS/amk

cc: Art Cunnigham, Weston
David Gates, CLD
Jeffrey Glen, Earthtech
Nannu Nobis, Nobis Engineering
Fredrick McGarry, NHDES
Jim Bouley, Bouley Associates
Susan Marshall, Esq.

TO: Interested Parties

FROM: Joint Working Group on Proposed Licensing of Professional Geologists

RE: Memorandum of Understanding Regarding Modifications to SB181

DATE: September 20, 1999

This memorandum of understanding has been prepared to summarize the proposed modifications made to New Hampshire Senate Bill 181 relative to licensure of geologists. These modifications have been made as a result of discussions among members of the ad-hoc Joint Working Group on Proposed Licensing of Professional Geologists.

BACKGROUND

In January, 1999 SB 181 was introduced in the NH legislature. The bill was initiated by the NH Council of Professional Geologists (NHCPG) to establish a licensing program in New Hampshire for professional geologists. NHCPG modeled the bill after similar statutes in other states, and from elements of existing NH laws establishing the licensure of certain professions (including professional engineering under NHRSA 310-A).

After initial feedback from representatives of several engineering organizations, it was agreed that time was needed for a joint effort to be undertaken to explore and attempt to resolve various issues associated with the initiative. As a result, NHCPG and others requested that the bill be "re-referred" by the NH Senate to allow for modifications to the bill by the fall of 1999 prior to further legislative action.

Following re-referral in March, 1999, the ad-hoc Joint Working Group on Proposed Licensing of Professional Geologists (JWG) was formed. The JWG includes representatives of several interested organizations, including:

- NH Council of Professional Geologists (Dorothy Richter, Paul Sanborn,
- James Griswold, Peter McGlen, Timothy Stone, Anthony Giunta),
- NH Geological Society (John Jemsek),
- Consulting Engineers of NH (William Straub, Nannu Nobis),
- NH Society of Professional Engineers (David Gates, Arthur Cunningham),
- NH Section of the American Society of Civil Engineers (Jeffrey Glenn), and
- NH Department of Environmental Services (Fred McGarry, John Regan)

Other groups were also contacted and invited to participate.

The objective of the JWG has been to explore the issues associated with the bill, to the end that the bill would establish licensure of professional geologists which would be of benefit to the citizens of the State of New Hampshire, and complement without conflict the engineering statute and profession. As of the end of August 1999, the JWG has met four times (March 29, 1999; May 2, 1999; June 7, 1999, and September 20, 1999).

The bill is comprehensive, and addresses a wide range of issues necessary to establish the licensure of professional geologists. Much of the bill has required little discussion at the JWG. Primary issues addressed by the JWG include the following:

1. Licensure versus certification of professional geologists,
2. Definitions of geology, the profession of geology, and professional geologist,
3. Overlap and exclusions related to the practices of geology and engineering,
4. Licensing requirements, including "grandfathering" without examination,
5. Continuing education requirements, and
6. Administrative costs.

Brief descriptions of these issues, and the understanding of resolutions to these issues as reflected in the modified bill, are presented below.

1. Licensure versus Certification

A significant amount of time was spent discussing the differences in licensure and certification, including the limitations associated with each option. Licensure involves a higher standard than certification. Licensed professional activities are limited to those which bear directly on the health, safety, and welfare of the public. For example, professional engineering is a licensed activity, as is the practice of medicine. Certification does not necessarily address the protection of health, safety, and welfare, but is rather a demonstration of technical competence and expertise in a certain field. Certification may relate to economic factors, consumer protection, and regulatory requirements. Examples of certified professions are public accounting and wetlands science.

Certification of geologists could encompass a broader range of geologic activities than licensure. It could also address the immediate objectives of the NHDES, as expressed by the agency to the JWG, relative to its desire to establish a professional standard for geologists working within state regulated programs. However, certification is voluntary, and does not prohibit individuals from engaging in the occupation who are not certified, and also does not provide the positive legal responsibility and accountability provided by licensing.

Examples of the types of geologic work that may directly affect public health, safety, and welfare, and therefore would be licensed are well described in the memorandum dated June 3, 1999 from the NHCPG to the members of the JWG (attached). These include geologic work to characterize seismic risks, water supply protection, and hazardous materials in soil and groundwater, among others.

The JWG acknowledges the NHCPG position relative to the case for licensure (and not certification), based on the health, safety, and welfare issues associated with certain geologic work, the potential benefits to the public of licensure, and other considerations. As a result, the definitions of geology and professional geology included in the modifications to the bill limit the licensed activity to those that are done "in furtherance of the health, safety, and welfare of the public and the environment".

Other geologic work, whether completed for monetary compensation or not, is not "professional geology" under the modified bill, and would not be so regulated.

2. Definitions of Geology, the Profession of Geology, and Professional Geologist

Extensive revisions were made to these definitions based on the requirements for licensure, and to establish and clarify appropriate distinctions between geology, licensed engineering, and other licensed or certified activities.

The definitions include the "furtherance of the health, safety, and welfare of the public and the environment" as a "filter" through which licensed professional geology is determined.

Professional geology is generally defined as science, and geologic interpretation and application of information derived from scientific geologic study. For example, characterization of geologic conditions, and the characterization and prediction of the occurrence of geologic features and man-induced phenomena are included. It does not include engineering and certain other applications of geologic information, or the identification or determination of engineered solutions.

3. Overlap and Exclusions of the Practices of Geology and Engineering

The modified bill's definitions specifically exclude the practice of engineering, land surveying, architecture, soil science, and wetland science from regulation as professional geology.

In addition, there was significant discussion in the JWG regarding the potential "overlap" of certain tasks or work which can be encompassed within the profession of geology and which are also commonly done by professional engineers as engineering work under NHRSA 310-A. Examples include investigations of the subsurface, characterization of soil and rock materials, characterization of contaminants in the environment, evaluation of groundwater flow and contaminant migration, among many others.

It was also discussed that when work may be lawfully completed by either type of licensed professional (geologist or engineer), it is the intent of the bill that state or local regulations requiring licensed professional services be inclusive of both professions.

Based on the above, in addition to the original language regarding exemptions for engineering, architecture, forestry, land surveying, soil science, wetlands science, and other fields, new language is included which precludes limiting the work of professional engineers lawfully completing engineering work under NHRSA 310-A.

4. Licensing Requirements, Including "Grandfathering" Without Examination

The bill included requirements typical of many states for licensure of professional geologists, including education, experience, and successful passage of a comprehensive professional examination. Regarding the professional examination, it is understood that it is the intent that the exam be comprehensive, on par with the highest accepted requirements in the nation. For example, the examination prepared by the National Association of State Boards of Geology is used in many other states, and would be appropriate for use in New Hampshire.

It was also discussed that while it is not appropriate to include specifications for future accreditation programs in a statute, if a nationally accepted accreditation program similar to the Accreditation Board for Engineering and Technology (which is required for a professional engineering licensure) becomes available for bachelors degrees in geology or related fields, it is understood that such a future nationally accepted accreditation program requirement would be appropriate to include in New Hampshire.

The modified bill provides for a limited period during which licenses could be issued by the board of professional geologists (Board) to qualified applicants who have not taken/passed the professional exam. The bill describes a one-year period beginning on the date when the administrative rules take effect under the statute during which licenses may be issued by the Board to applicants who otherwise meet all other requirements for licensure. It is understood that this limited one-year period is an appropriate way to initiate the licensure program, and that other "grandfathering" without examination is not contemplated.

5. Continuing Education Requirements

The bill includes a continuing education requirement of a minimum of 24 hours of qualifying instruction or professional development activity for each two-year renewal period of the license. The 24 hour requirement is typical of the more rigorous continuing education requirements for professional geology licenses in other states. In 1998, the NH professional engineering statute was amended to include a similar requirement (with 30 hours per two-year license period). The continuing education requirement in SB181 is an important provision for maintaining high standards of licensed professionals over time.

6. Administrative Costs

The bill would add the Board of Professional Geologists to the NH Joint Board. The NH Joint Board would be responsible for the administrative costs of the professional geology licensure program. Although the responsibility for establishing license fees rests with the Board of Professional

Geologists and the NH Joint Board, it is understood that the NHCPG anticipates and desires that administrative costs will be fully supported by professional geology license fees, and not rely on fees collected for other licensure programs of the NH Joint Board.

As the legislative process continues, it is anticipated that the understandings outlined above will be reflected in the input provided by participants in the JWG, from both the engineering and geology communities.

Representatives of the JWG believe the modifications to the bill reflect reasonable, appropriate, and supportable changes that strengthen the bill in meeting the objective of establishing a licensing program for professional geologists in New Hampshire.

Members of Joint Working Group

Name	*Affiliation*
	NHCPG
	CEAH
	NH DES
	NHCPG
	NHCPG
	NHCPG
	NHCPG
	NHSPE
	NH DES
	NHCPG
	NHGS
	~~NHSPE~~
	NH ASCE

Attachments

- *SB 181 (with proposed modifications through 9/20/99)*
- *NHCPG Memorandum dated June 3, 1999 regarding licensure*

American Ground Water Trust

Independent Authority on Ground Water

16 Centre Street ★ Concord, New Hampshire 03301 ★ (603) 228-5444
Fax (603) 228-6557 ★ Email: agwtHQ@aol.com ★ Web: www.agwt.org

September 29, 1999

Senator Burton Cohen
Chair, Executive Departments and Administration Committee
State House, Rm 302
107 N. Main Street
Concord, NH 03301-4951

RE: Senate Bill 181 - Licensure of Geologists

Dear Senator Cohen:

The American Ground Water Trust is a 501(c)(3) national not-for-profit educational organization. Our programs are designed to help consumers, community decision-makers, regulators and legislators understand the background to water supply, ground water protection policies, and environmental issues relating to development and remediation proposals.

The Trust has the sole mission of stimulating awareness, providing information, and promoting public education about ground water. One of the major challenges we face in our public education outreach is to gain, and retain, public confidence in ground water as a reliable and safe supply source. We regard the training, licensing, and continuing education requirements of geologists as a very important element in ensuring ground water integrity. The public needs the assurance that the development and protection of the nation's aquifers is in the good hands of trained, experienced and licensed geologists and other qualified professionals when and where appropriate.

The New Hampshire Department of Environmental Services (NHDES) recognizes in its rules and regulations the importance of geology concerning groundwater development and remediation. The rules call for obtaining valid geologic information through well-conceived geologic investigations followed by critical geologic interpretation of the investigative information. Some examples include:

- Groundwater Management and Groundwater Release Detection Permits - Env-Wm 1403, Part 1403.07(d)(14);
- Solid Waste Rules, Groundwater Protection Standards - Env-Wm 2504.02;
- Solid Waste Rules, Geologic Siting Limitations - Env-Wm 2504.05;
- Site Selection of Large Production Wells for Community Water Systems - Env-Ws 379.07(a).

Geology is a specific and unique discipline of scientific training and experience. When decisions regarding groundwater use and protection are made without valid geologic information and interpretation our water resources may be adversely impacted, which consequently may put the public at risk. We strongly urge you and your committee to recommend passage of Senate Bill 181 by the full Senate in its current form to enhance and strengthen existing law concerning public health, safety and welfare.

Thank you for your consideration of our perspective on this matter.

Respectfully submitted,

Garret W. Graaskamp

Garret W. Graaskamp, PG
Ground Water Specialist
American Ground Water Trust



New Hampshire Association of Conservation Commissions

54 Portsmouth Street, Concord, NH 03301 (603) 224-7867

October 4, 1999

The Honorable Burton J. Cohen, Chairman
Senate Executive Departments and Administration Committee
Room 101, Legislative Office Building
Concord, NH 03301

Dear Chairman Cohen and Members of the Committee:

The NH Association of Conservation Commissions is pleased that the geologists and engineers have worked out the details for licensing geologists in a manner satisfactory to both groups and urges the Committee to recommend the resulting proposed revision to SB 181 "ought to pass".

Although NHACC did not testify at the original hearing on SB 181, we have in the past and continue to support systems of licensing and certification designed to ensure that those claiming expertise in a given field actually posses that expertise. Although conservation commissions are less likely to hire geologists than wetland or soil scientists, there are situations that call for the services of a geologist, for example in determining the extent of aquifer recharge areas. In most instances municipalities have no easy way of determining who is qualified to perform a particular geological study. SB 181 would provide a way to do so.

Again, NHACC urges the Committee to adopt the compromise revision to SB 181.

Sincerely yours,

Marjory M. Swope
Executive Director

MMS/m
cc: The Honorable Sheila Roberge
The Honorable Francine Wendelboe

SOCIETY
FOR THE
PROTECTION
OF
NEW HAMPSHIRE
FORESTS

54 PORTSMOUTH STREET
CONCORD, NH 03301-5400
(603) 224-9945
FAX (603) 228-0423

September 16, 1999

The Honorable Burt Cohen
Chair, Senate Committee on Executive Departments and Administration
Room 101 Legislative Office Building
concord, NH 03301

Re: SB181, AN ACT relative to the licensure of geologists

Dear Senator Cohen:

The Society for the Protection of NH Forests wishes to express its support for passage of SB181, and the licensure of professional geologists.

As members of the Senate well know, assurance of a plentiful and healthful public drinking water supply is fast becoming one of New Hampshire's most challenging public environmental policy issues. The SPNHF is becoming increasingly involved in this complex issue, primarily from the standpoint of ensuring that open space lands surrounding public drinking water wellheads and surface reservoirs remain protected from development-related contamination.

Understanding how subsurface water moves through the ground, the mapping of subsurface water supplies, how aquifers and wellheads recharge, how contaminants move through groundwater, and how to mitigate the public health consequences of water contamination is the professional responsibility of geologists.

There seems little doubt that, as New Hampshire grows, the importance of this profession will also grow. The principle purpose of licensing a profession is to ensure that those so licensed are required by law to adhere to strict professional standards, so that the public may be assured that their health and safety is served by this profession. We believe the public interest in healthful water supplies necessitates some degree of oversight by the state of individuals who practice this profession.

We urge your favorable consideration of SB181.

Sincerely,

Charles R. Niebling
Senior Director, Policy

Cc: Senators Francoeur, Brown, D'Allesandro, Larsen, Roberge and Trombly

Recycled Paper

New Hampshire Geological Society

PMB 133
26 South Main Street
Concord, NH 03301



October 1, 1999

Senator Burton J. Cohen
Chair, Executive Departments and Administration Committee
State House, Room 32
107 North Main Street
Concord, NH 03301-4951

Re: Senate Bill 181 Relative to Licensing of Professional Geologists

Dear Senator Cohen:

The New Hampshire Geological Society (NHGS) endorses Senate Bill 181 relative to licensing of professional geologists. The NHGS initially supported legislation by forming an Ad Hoc committee to explore the subject in January 1998. Shortly thereafter, the NHGS supported formation of the New Hampshire Council of Professional Geologists (NHCPG) whose primary mission is to promote the licensing of geologists in New Hampshire through statutory regulation.

Subsequently, the NHGS has been involved in an advisory role during the development of the proposed amended bill. This included our participation with representatives of the NHCPG and the engineering community in the Joint Working Group on Proposed Licensing of Professional Geologist, and discussion of key details of the bill within our organization via our quarterly newsletters, executive meetings, general dinner meetings and informal questionnaires.

We are proud to have assisted in creating an amended bill as it speaks in the best interests of New Hampshire citizens as well as the geologic community. The NHGS mission is to advance the science of geology in New Hampshire by contributing to public education, strengthening the role of geology in environmental concerns, and increasing awareness and knowledge of geology in the state. Our membership exceeds 180 people. We are comprised of consultants, industry leaders, state regulators, government researchers, teachers and students, most of which have an advanced degree in the geological sciences.

The breadth of support within our organization is overwhelming. We are not aware of any active geologist, professional or otherwise, who does not support the proposed amended bill.

We maintain that, by establishing licensure for professional geologists, the State of New Hampshire will fulfill the need to maintain high standards for professional geologists who, through their work, protect human health, safety and welfare and the environment in *The Granite State*. We are confident that you will concur with the NHGS, NHCPG and other organizations by supporting passage of Senate Bill 181.

Thank you for your time and effort in reviewing the merits of the bill. Please contact us at 647-9700 ext. 111 if we can be any assistance within your decision-making process.

Sincerely yours,
NEW HAMPSHIRE GEOLOGICAL SOCIETY, INC.

John P. Jemsek, Ph.D.
President

Officers

President -Dorothy Richter
Hager-Richter Geoscience, Inc.
Salem, New Hampshire

Vice President - Walter Carlson
NH Dept. Environmental Services
Concord, New Hampshire

Secretary - Gene Simmons, Ph.D.
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Salem, New Hampshire

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GZA GeoEnvironmental, Inc.
Manchester, New Hampshire

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Aries Engineering, Inc.
Concord, New Hampshire

Kenneth W. Milender
Atlantic Geoscience Corporation
Gilford, New Hampshire

Kenneth A. Richards
Dames & Moore
Salem, New Hampshire

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North American Reserve

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Muriel Robinette
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Paul Sanborn
Sanborn, Head & Associates

William Siok
American Institute of
Professional Geologists

NEW HAMPSHIRE COUNCIL OF PROFESSIONAL GEOLOGISTS

P.O. Box 10
Epping, New Hampshire 03042-0010

September 27, 1999

Senator Burton J. Cohen
Chair, Executive Departments and Administration Committee
State House, Room 32
107 North Main Street
Concord, NH 03301-4951

RE: Senate Bill 181 - AN ACT relative to the licensure of Geologists

Dear Senator Cohen:

The New Hampshire Council of Professional Geologists (NHCPG) strongly endorses SB181, as amended, regarding the licensure of Geologists. NHCPG has actively sought input on the bill from interested parties and, since the bill was re-referred in March, 1999, has participated in a Joint Working Group with representatives of several professional engineering organizations and the NH Department of Environmental Services to address possible concerns so that the amended legislation will complement without conflict the current engineering statute and profession.

The work of professional geologists touches the lives of every citizen of this State, and directly affects their health, safety, and welfare. For example:

- In recent years, governmental bodies have increasingly come to rely upon advice from professional geologists when formulating laws and policies to protect the environment and the health, safety, and welfare of the citizens of New Hampshire.
- The work of professional geologists assists the citizens and governmental bodies of New Hampshire in providing a safe, potable, and abundant supply of drinking water, and to help ensure that such supplies are adequately protected from contamination and overuse.
- The work of professional geologists assists the citizens and governmental bodies of New Hampshire in characterizing geological and hydrogeological hazards related to the acts of humans, such as contamination of groundwater resources.
- The work of professional geologists assists the citizens and governmental bodies of New Hampshire in characterizing natural geological hazards such as radon, flooding, landslides, coastal erosion, and earthquakes.

As is the case with any profession that directly affects their health, safety and welfare, the citizens of New Hampshire need assurance that persons offering services as professional geologists are adequately trained, experienced, and competent, and are practicing their profession in an ethical manner. SB181 provides that assurance by establishing a professional licensure program designed to be rigorous and on par with national standards for licensure of professional geologists and related professions.

NHCPG is an organization of professional geologists and corporations that rely on the services of professional geologists. The organization is composed of over 160 individual members and 33 corporate sponsors. The corporate sponsors include include both large and small firms, and may be characterized as multidisciplinary firms, engineering firms, environmental firms, and geological firms.

Sincerely yours,

Dorothy Richter
President
New Hampshire Council of Professional Geologists

Dartmouth College HANOVER • NEW HAMPSHIRE • 03755-3571
Department of Earth Sciences • 6105 Sherman Fairchild Hall • Tel: 603 646-2372
Fax: 603 646-3922

LESLIE SONDER
Associate Professor

1 November 1999

Dr. Charles A. Crocetti
Sanborn, Head, and Associates, Inc.
6 Garvins Falls Road
Concord, NH 03301

Dear Chip,

Thank you very much for your recent letter and telephone call describing your efforts to establish licensing of professional geologists in the state of New Hampshire. The practice of geology has direct consequences to the protection of public health, safety, and welfare; to give only a few examples, geological knowledge is critical to the identification of safe drinking water, the assessment of risk from natural hazards such as earthquakes, the identification and extraction of mineral resources, and the mitigation of groundwater pollution. We agree with you that licensing will increase public confidence in professional geologists as well as elevate the level of practice among professional geologists by establishing professional and ethical standards. We are pleased to see that the proposed legislation excludes from licensing geologists associated with academic, government, or research institutions, and thus we do not see any problems or conflicts related to issues of academic freedom.

The Department of Earth Sciences at Dartmouth College is pleased to support the proposed legislation. We are grateful for your efforts on behalf of the geological community in New Hampshire.

All the best,

Leslie Sonder
Acting Chair

UNIVERSITY OF NEW HAMPSHIRE

College of Engineering and Physical Sciences
Department of Earth Sciences
James Hall
56 College Road
Durham, New Hampshire 03824-3589
(603) 862-1718 Fax: (603) 862-2649
e-mail: earth.sciences@unh.edu

March 3, 2000

The Honorable Robert S. Mercer, Chair
House Executive Departments and Administration
Legislative Office Building, Room 202
Concord, New Hampshire 03301

RE: Senate Bill 181 Licensure of Geologists

Dear Representative Mercer:

I wish to add my support for passage of SB 181 to license professional geologists in the State of New Hampshire. I have had the opportunity to watch this impressive effort evolve over the past year as a member of the Board of Advisors of the New Hampshire Council of Professional Geologists, the New Hampshire Geologic Resource Advisory Committee (NHGRAC), and the New Hampshire Geologic Society. There is strong support and need for such licensure to assure protection of our citizenry in any and all decisions which bear on earth materials (rocks and minerals), resources (sand, gravel, and water), and geologic hazards (landslides to flood control) with in the State. At the same time a more formal identification of the profession and practitioner will improve public understanding of geology, its impact on their lives, and their role in it.

The geological community will be most appreciative of your efforts as this bill reaches the House of Representatives.

Sincerely yours,

Wallace A. Bothner

Wallace A. Bothner, Chair
Professor of Geology

cc: Ms. Dorothy Richter, President, Hagar-Richter Geoscience, Inc.
Ms. Teresa Rosenberger, Esq.

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2900 FAX (603) 271-2456

March 8, 2000

The Honorable Robert S. Mercer, Chair
House Executive Departments & Administration
Legislative Office Building, Room 202
Concord, NH 03301

Subject: Senate Bill 181-FN relative to the licensure of geologists

Dear Representative Mercer:

Thank you for the opportunity to provide testimony supporting favorable action on SB 181-FN. Our support is based upon the thorough analysis of the issue that has been made by a Joint Working Group including the NH Council of Professional Geologists, the NH Geological Society, the Consulting Engineers of NH, the NH Society of Professional Engineers, the NH Section of the American Society of Civil Engineers, the Department of Environmental Services and members of the geological profession. Senate Bill 181-FN was introduced in January, 1999 and was re-referred in March, 1999 at the request of the working group to allow time for modifications in time for this legislative session. We are pleased that the broadly based, representative working group has reached a consensus and focused on ways and means to insure that the licensure would result in benefits to the citizens of New Hampshire while complementing, without conflict, the existing engineering statute and profession. Emphasis has been appropriately placed on specific professional geologic work which is done in furtherance of the health, safety and welfare of the public and the environment. The group examined in detail the certification alternative, practical and clear provisions to avoid undesirable overlap between the practices of geology and engineering, continuing education requirements, grandfathering provisions and fees.

The bill would add the Board of Professional Geologists to the NH Joint Board. Professional geology license fees would be established and would fully support the associated administrative costs. As the complexity of environmental issues increases, our scientific and technical sophistication in dealing with them also must increase. Appropriate licensing, such as created by this bill, is one significant means to help insure that the public is protected in vital areas related to health, safety and welfare. If you have any specific questions or concerns, please contact me or John Regan at 271-3744. John is a hydrogeologist in the Department's Site Remediation Programs, and he has been an active member of the Working Group which has proposed this legislation. Thank you for your consideration.

Sincerely,

Robert W. Varney
Commissioner

cc: The Honorable Burton J. Cohen
The Honorable Sheila Roberge
The Honorable Francine Wendelboe

Sanborn, Head & Associates

Consulting Engineers & Scientists

September 30, 1999

Senator Burton J. Cohen
Chair, Executive Departments & Administration Committee
State House, Room 302
107 North Main Street
Concord, NH 03301-4951

RE: Senate Bill 181-Licensure of Geologists

Dear Senator Cohen:

Sanborn, Head & Associates, Inc. strongly supports the licensure of professional geologists in the State of New Hampshire as agreed upon in the amendment to SB181 prepared by representatives of the engineering and geological professions. Sanborn, Head & Associates, Inc. is a multi-disciplinary, consulting engineering and geosciences firm. We employ geotechnical, civil, groundwater, chemical and mechanical engineers as well as geologists and hydrogeologists. In our firm, engineers and geologists work collaboratively on a wide range of projects including site characterization and remediation at contaminated sites, water supply development, site development and brownfields redevelopment, solid waste facilities, and resource conservation and development projects.

We believe that licensure of professional geologists will provide many tangible benefits for the citizens of the State of New Hampshire, including:

- Licensure inherently raises the standard of practice among professionals such that the public may be assured that a licensed professional geologist has demonstrated and continues to maintain the qualifications necessary to practice professional geology;

- Licensure assures the citizens of the State of New Hampshire that persons practicing as licensed professional geologists are required to maintain standards of practice and ethical standards commensurate with their professional standing; and

- Licensure will provide assurance that the practice of geology will be carried out by qualified professionals in matters involving the health, safety and welfare of the citizens of this state and the environment.

We applaud your efforts in sponsoring this important bill and look forward to its successful passage during the upcoming legislative session.

Sincerely,
SANBORN, HEAD & ASSOCIATES, INC.

Paul M. Sanborn
President/Principal

R. Scott Shillaber, P.E.
Principal

Charles L. Head, P.E.
Principal

Charles A. Crocetti, P.G.
Principal

PMS:jmc

S:\DATA\LETTERS\093099Cohen.ltr

Paul M. Sanborn ■ Charles L. Head ■ R. Scott Shillaber
Charles A. Crocetti ■ Mathew A. DiPilato ■ Daniel B. Carr ■ Duncan W. Wood

Sanborn, Head & Associates, Inc.
6 Garvins Falls Road ■ Concord, New Hampshire 03301
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Fax: 603.624.8307
E-mail: MAN@HaleyAldrich.com

HALEY & ALDRICH

29 September 1999

Senator Burton J. Cohen
Chair, Executive Departments and Administrative Committee
State House, Room 302
107 North Main Street
Concord, New Hampshire 03301-4951

Subject: Senate Bill 181 -- Licensure of Geologists

Dear Senator Cohen:

We are writing this letter to express our enthusiastic support for passage of Senate Bill 181 – Licensure of Geologists, currently under review by your committee in the New Hampshire State Senate. We believe that the licensing bill would establish an appropriate measure of qualifications and accountability for geologists practicing within the state which does not exist today.

As a 380 person consulting company which employs both engineers and geologists in 13 offices nationwide, we are keenly aware of the need for assurance of qualifications and legal responsibility on projects. Geologists routinely perform work and offer opinions that directly affect public health and welfare in areas ranging from public and private water supply work to investigations of hazardous waste sites. Through licensing, businesses such as ours as well as state and local agencies and the public in general would be assured of qualified professionalism in this work.

We urge you to support and pass the bill. Please feel free to call if you have questions or comments on this matter.

Thank you very much for your attention.

Sincerely yours,
HALEY & ALDRICH, INC.

for Muriel S. Robinette, P.G.
Vice President

Jeffrey A. Klaiber, P.E.
Vice President
G:\BUSDEV\H&Asupportletter.doc

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September 28, 1999

Senator Burton J. Cohen
Chair, Executive Departments & Administration Committee
State House, Room 302
107 North Main Street
Concord, New Hampshire 03301-4951

RE: Senate Bill 181 - Licensure of Geologists

Dear Senator Cohen:

Aries Engineering, Inc. of Concord, New Hampshire supports the licensing of geologists for this state. Aries Engineering, Inc. employs geologists and engineers. The geologists interpret and apply scientific geologic information and assist engineers on projects involving hazardous waste site cleanup and water supply development.

The public looks to geologists to interpret and apply scientific geologic information relating to land use and management such as solid waste disposal, groundwater protection, contaminant investigations, coastal erosion and water supply development. Additionally, geologists study and evaluate natural geological hazards such as radon, flooding, landslides, and earthquakes in New Hampshire.

At Aries Engineering, Inc, geologists and engineers rely on each other to perform the various phases of environmental project work. Aries believes that New Hampshire will benefit from the licensure of geologists in the following ways:

1. Maintenance of minimum educational and experience requirements and ethical standards governing the practice of geology in New Hampshire;

2. Assure state and local agencies, businesses and the general public that the practice of geology will be carried out by qualified professionals when it involves the health, safety and welfare of the public and the environment; and

3. Formulation and oversight of policies and rules relating to geologic sciences for protection of public health and the environment.

Sincerely,

Peter J. McGlew, P.G.
Principal Hydrogeologist

Michael P. Donahue, P.E.
Principal Engineer

JAWORSKI
GEOTECH, INC.

SERVICES
- Geotechnical
- Environmental
- Construction
- Underground Tank & Materials Testing

October 1, 1999

Senator Burton J. Cohen
Chair, Executive Departments and Administrative Committee
State House, Room 302
107 North Main Street
Concord, NH 03301-4951

re: Senate Bill 181 - AN ACT Relative to the Licensure of Geologists

Dear Senator Cohen:

This letter is written in support of SB 181 relative to the licensure of geologist. Jaworski Geotech, Inc. (JGI) is the ninth largest engineering firm in New Hampshire and employs eight geologist who work closely with our engineering and technical staff. Engineers have been licensed in the State of New Hampshire for many years for many of same reasons geologists should be licensed now. These include, among other things:

- Public Health, Safety, and Welfare
- Qualification Assurance
- Legal Responsibility
- Professional Recognition

As a licensed professional engineer in eight states, I urge your favorable consideration of SB 181. As an employer of geologists, I must seek out the most qualified professionals to accomplish the technical work of our firm. The public, who is our primary client, must have assurances that the professionals we employ are qualified. I believe the licensure of geologists will be of significant benefit to the citizens of the State of New Hampshire.

I thank you for your consideration of this matter.

Very truly yours,

JAWORSKI GEOTECH, INC.

Gary W. Jaworski, P.E., Ph.D.
President

/etc

150 Zachary Road
Manchester, NH 03109-5614
(603) 647-9700 Fax 647-4432

44 Wood Avenue, Unit #4
Mansfield, MA 02048-1255
(508) 337-6100 Fax 261-1348

114 Woodlawn Road
Berlin, CT 06037-1535
(860) 829-1725 Fax 829-1745

Internet Address: http://www.jgi-geo.com

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Testimony of Timothy Stone, PG, LSP
Representing the New Hampshire Council of Professional Geologists (NHCPG)
Before the Executive Departments and Administration Committee
on March 8, 2000 regarding
SB181 Relative to the Licensure of Geologists

Good morning Mr. Chairman and members of the committee. My name is Tim Stone. I'm the Legislative Committee Chairperson for the New Hampshire Council of Professional Geologists, also known as NHCPG. I am also co-owner of an environmental consulting firm based in Portsmouth and a licensed professional geologist in several states, including our neighbor Maine. NHCPG was established in 1998 to promote the licensure of geologists in New Hampshire and represents nearly 200 individual and business members.

NHCPG believes that licensure of geologists would benefit the citizens of New Hampshire by providing a measure of qualifications and accountability which do not exist today. The professional geologist's role in characterizing geologic conditions is essential to contaminated site evaluations, construction projects, studies for water supply development and protection, and planning initiatives involving the use of natural resources. Licensure will establish minimum educational and experience standards, continuing education requirements, and ethical standards governing the practice of geology when it bears directly on the protection of public health, safety and welfare. Licensure will also provide a mechanism to hold geologists responsible for their work product which often involves the investigation of health hazards posed by soil and groundwater contamination, and the expenditure of public monies such as NH Petroleum Cleanup Funds.

While SB-181was in the Senate, NHCPG met on four occasions with several of the State's leading engineering organizations to address any issues the engineering community may have had regarding the Bill. In response to those meetings, the original bill was amended to address the issues raised. There was broad support for the amended Bill and it passed with an unanimous vote of the Senate.

More information on the role of geologists in NH as it relates to the protection of public health, welfare and the environment is included in the information packet provided to you. The packet also includes letters in support of the Bill from several State agencies including the Department of Environmental Services and the Department of Transportation, as well as, geologic and engineering consulting firms, academic institutions, and non-profit organizations which benefit from the work product of geologists.

The members of NHCPG welcome the obligations and responsibilities of licensure, and firmly believe the citizens of this State will benefit from licensure of geologists. Therefore, we respectfully request your support of SB181. We thank you for your time and would be happy to answer any questions you may have.

SB: 181-FN AN ACT Relative to the licensure of geologists

This bill establishes the board of professional geologists and authorizes the regulation of the practice, examination, licensure, and discipline of professional geologists.

WHY LICENSE GEOLOGISTS?

Licensing geologists would benefit citizens of New Hampshire by providing a measure of qualifications and accountability which does not exist today without licensing. Licensing would establish minimum educational and experience requirements, and ethical standards governing the practice of geology in New Hampshire, as well as provide a mechanism to hold geologists responsible for their work product which often involves the public health and safety, and the expenditure of public monies such as the State's petroleum cleanup funds.

PUBLIC HEALTH AND WELFARE, CONSUMER PROTECTION

- Geologists routinely perform work and offer opinions that directly affect public health and welfare.
- Licensure would assure state and local agencies, businesses, and the general public that the practice of geology will be carried out by qualified professionals when it involves the health, safety and welfare of the public and the environment.
- Governmental bodies have increasingly come to rely upon advice from geologists when formulating laws and policies to protect the environment.
- Licensure is particularly important for a regulatory- or service-driven industry where there may be few tangible factors to evaluate qualifications of a professional geologist.

QUALIFICATION ASSURANCE

- Assures that persons offering services as professional geologists meet education and experience requirements, and are governed by a professional code of ethics.
- The continuing education requirements of licensure will encourage the improvement of a licensed professional's qualifications and geological skills.
- Licensure assures the State and local agencies, businesses and the general public that qualified geologists are available to work in the state.

LEGAL RESPONSIBILITY

- Licensure would place an affirmative legal responsibility and accountability on professional geologists and, concurrently, provides a specific legal basis for redress.

PROFESSIONAL RECOGNITION

- Licensure of geologists is an acknowledgment by the State of New Hampshire that, in the public interest, decisions regarding geologic issues be made by an appropriately qualified professional.

WHAT DO GEOLOGISTS DO INVOLVING PUBLIC HEALTH, SAFETY AND WELFARE?

- The public looks to geologists to solve problems relating to land use and management such as solid waste disposal, groundwater protection, contaminant investigations (e.g. NH Petroleum cleanup funded projects), coastal erosion, potable water, supply development and public works projects to name just a few.

- Federal and State regulations require the skills of geologists to perform geological investigations and interpret geological conditions.

- Expert opinions regarding the geological conditions of an area provided to regulatory bodies, businesses and the public can have significant impacts on the economy and environmental quality of New Hampshire.

- Geologists study and evaluate natural geological hazards such as radon, flooding, landslides, coastal erosion, and earthquakes, all of which have documented occurrences in New Hampshire and some of which have had significant financial impacts. Loss of life and property in many instances has been reduced when advice provided by geologists has been accepted and appropriately acted upon in time by governmental bodies, businesses and citizens.

- Geologists study and evaluate geological and hydrogeological hazards related to the acts of humans such as contamination of surface and groundwater resources.

- The advice of geologists is needed to assist the citizens and governmental bodies of New Hampshire in providing a safe, potable, and abundant supply of drinking water; to ensure that such supplies are adequately protected from contamination and overuse; to reduce the risk from other geological hazards, both natural and human-caused.

SPECIFIC EXAMPLES INVOLVING THE EXPERTISE OF GEOLOGISTS:

- Evaluation of the impacts of larger water supply withdrawals such as highlighted by the Hampton Water Works / Town of Stratham aquifer water rights and withdrawal controversy.
- The study of the occurrence and movement nitrates in groundwater from agriculture, sewerage disposal, or such sources as plane deicing fluids. A study of the hydrogeology at the Pease International Tradeport, and the extent of nitrate contamination, resulted in the decision not to build a costly water treatment plant.
- The siting and operation of new landfills, and the closure and monitoring of historical landfills.
- Conducting petroleum release investigations for which eligible expenses are reimbursed with public money from State oil remediation and cleanup funds.
- The investigation of municipal and residential well contamination in such towns as Spofford, Derry, Franklin, Merrimack, Northwood, and Seabrook, and the protection of water supply wells by the pro-active installation of early warning groundwater monitoring networks such as recently done by Portsmouth and Dover.
- The Water Supply Land Conservation Matching Grant Program which requires the identification of land that is critical to the protection of drinking water resources.
- Hundreds of groundwater investigations conducted statewide addressing contamination from oils and hazardous materials, many now focusing on MTBE, an additive used in reformulated gasoline.
- Sand and gravel resource evaluations for the transportation and construction industries.
- Impacts of land application of sewage sludge on groundwater quality and the influence of application site geology.
- The evaluation of site geology to provide geotechnical data in support of construction projects.
- Earthquake risk studies and monitoring; in the news following a recent earthquake in southeastern New Hampshire and the NH Public Radio program "The Exchange" whose guests included an earthquake geologist and a representative of the NH Office of Emergency Management.

OFFICE OF STATE PLANNING
STATE OF NEW HAMPSHIRE
2 ½ BEACON STREET – CONCORD 03301-4497
TELEPHONE: 603-271-2155
FAX: 603-271-1728

MEMORANDUM

TO: NH Planning Boards

FROM: Francesca Latawiec, CPSS, PWS, Principal Planner, Water Protection Assistance Program

DATE: November 10, 1999

RE: Requirements for Soils and Wetlands Data in Subdivision [Site Plan Review] Regulations, 1999

It is the intent that eventually all subdivisions be required to be reviewed, passed + stamped by a licensed Geologist

This will transmit recommended language that can be included in subdivision [site plan] review regulations to specify on-site data requirements for local reviews. This proposal was designed to implement the findings of the Ad Hoc Committee on Site Review Requirements, an interagency, multi-disciplinary committee whose charge it has been to develop guidance for planning boards to use in reviewing local subdivision plans [site plans]. The intent is to provide the planning board with guidance as to the type of data needed for making informed land use decisions about developments of different magnitudes and levels of intensity. For each level, the data recommended to be required is specified in this document, as well as the standards to be used in preparing the data and the type of professionals qualified to do the work.

Questions and/or comments regarding the content or usefulness of the enclosed information are welcome.

FL:cjw

model7.fl

Enclosure

Requirements for Soils and Wetlands Data in Subdivision and Site Plan Review Regulations

State of New Hampshire,
Jeanne Shaheen, Governor

New Hampshire Office of State Planning,
Jeffrey H. Taylor, Director

New Hampshire Department of Environmental Services
Robert W. Varney, Commissioner

September, 1999

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Requirements for Soils and Wetland Data in Subdivision [Site Plan Review] Regulations

Background

Municipal subdivision and site plan review regulations require applicants to submit site specific technical information needed by the planning board to make informed decisions about proposed land use changes.

This document provides guidance to planning boards in determining the level of physical site characteristics that should be required for proposals with different levels of development intensity. It describes three levels of planning board review and specifies appropriate technical information that should be required for each. It also details the type of professionals qualified to prepare this information. A flow chart depicting the review process can be found in Figure 1 on page 7 with specific requirements in Figure 2 on page 8.

This document complements the review process outlined in the report entitled DATA REQUIREMENTS FOR SITE REVIEW: GUIDANCE FOR PLANNING BOARDS, DES and OSP, 1999. That report should be reviewed carefully by municipalities before adopting the recommendations herein. Furthermore, planning boards should keep a copy of the document on file for public review along with their subdivision [site plan review] regulations. Copies of the document are available for $3.50 from the Office of State Planning (OSP) at 2 ½ Beacon Street, Concord, NH 03301, (603) 271-2155.

It is important for the planning board to carefully review the requirements presented in this document prior to adoption. There may be conflicts or inconsistencies between them and the requirements of the existing subdivision and site plan review regulations.

Model Ordinance

Note: The language presented here can be incorporated into either the subdivision or site plan review regulations. [Bracketed] text is intended to apply to site plan review regulations.

EXPLANATORY NOTES

Italicized text in this column is for explanatory purposes and should not be incorporated into the subdivision [site plan review] regulations.

SECTION 1: Authority and Purpose

Pursuant to the authority vested in the planning board by the voters of the Town of _____on _____ , and in accordance with the provisions of RSA 674:35 & 36 [RSA 674:43 & 44] as amended, the Planning Board hereby adopts the following regulations governing the subdivision of land [development or change or expansion of use of tracts for nonresidential uses or multi-family dwelling units, whether or not such development includes a subdivision or resubdivision of the site.] These regulations are designed to accomplish the purposes set forth in RSA 674:36, as amended [RSA 674:44, as amended] and for the purpose of protecting the health, safety, and general welfare and to provide for the harmonious development of the Town of _____ and its environs.

The language in the left hand column should be the standard Authority and Purpose section of the subdivision and site plan review regulations already adopted by the municipality. The planning board should review this section of their regulations to determine if they are consistent with the language presented here.

SECTION 2: Definitions

The terms defined in this section should be added to the main definitions portion in the subdivision [site plan review] regulations. It may be necessary to amend some existing definitions for consistency with this recommended review process

"Average area" means the total acreage of the property, exclusive of very poorly drained soils, divided by the total number of proposed lots. (Use of average area here assumes that all lots are roughly the same size.)

This definition applies to subsection 3B of this proposal.

"Bedrock within 18 inches of the soil surface" meets the definition of either lithic or paralithic material. At least 75 percent of delineated areas must meet this definition with no more than 15 percent of the area having soil properties more limiting (i.e., hydric conditions). (Site-Specific Soil Mapping Standards for New Hampshire and Vermont, SSSNNE Special Publication No.3, June 1999, pp 6-7)

This defines one of the limiting physical features identified in subsection 3C, Level 2, Step C.

"Indurated" means a rock or soil hardened or consolidated by pressure, cementation, or heat. (Dictionary of Geological Terms, Bates and Jackson, 1984.)

This further defines one of the taxonomic terms used to define lithic materials.

"Limiting physical features" means rock outcrops, steep slopes > 35%, soils with bedrock within 18 inches of the soil surface, and very poorly drained areas.

These are to be identified under subsection 3C, Level 2, Step C. ***Presence of any of these limiting physical features on-site triggers the requirement for a subsection 3D, Level 3 review.***

"Lithic material" means unaltered material that is continuous, coherent, and indurated. The material qualifies for an "R" designation as a master layer (USDA Soil Survey Manual, 1993, pg. 121). Plant and tree roots cannot enter except in cracks. Hand digging with a spade is impractical. Some lithic material can be ripped with heavy power equipment. The material must be in a strongly cemented or more cemented rupture-resistance class. Granite, quartzite, and indurated limestone or sandstone are examples. (Keys to Soil Taxonomy, Eighth Edition, 1998, pg.32)

This further defines one of the taxonomic terms used to define bedrock.

"Non-limiting" means the area, exclusive of very poorly drained soils, rock outcrops, bedrock within 18 inches of the soil surface, and soils with steep slopes greater than 35 percent

This term is defined here, as it is to be used to determine the development intensity criteria under subsection 3B.

"Paralithic material" means a relatively unaltered material that has an extremely weakly cemented to moderately cemented rupture-resistance class. The material qualifies for a "Cr" designation as a subordinate distinction within a master soil layer (USDA Soil Survey Manual, 1993, pg. 124). Cementation or bulk density are such that plant and tree roots cannot enter except in cracks. The material can be hand dug with a spade with much difficulty. Commonly these materials consist of weathered or weakly consolidated bedrock. (Keys to Soil Taxonomy, Eighth Edition, 1998, pg.32) This further defines one of the taxonomic terms used to define bedrock.

This further defines one of the taxonomic terms used to define bedrock.

"Soil surface" refers to the top of the first mineral layer.

This term is defined to clarify the position from which soil depth measurements are to be taken in order to meet the prescribed standards.

SECTION 3: Requirements for Soils and Wetlands Data in Subdivision [Site Plan Review] Regulations

(In all cases, subsection A, Level 1 information is required.)

This section provides the planning board with a framework for determining the type of data needed for different magnitudes and levels of development intensity. Three levels of planning board review are established; for each level, the data to be required is specified, as well as the standards to be used in preparing the data and the type of professionals qualified to do the work. A schematic diagram of the review process is shown in Figure 1. Further details about specific requirements are shown in Figure 2.

A: Level 1 Delineation of Wetlands and Surface Waters: for All Subdivision [Site Plan Review] Applications

Information on wetlands and surface waters shall be provided on the plan with identification and delineation of the resources in accordance with the definitions and standards specified in Steps A and B of this section. **The written documentation specified in Step C shall be included on the plan and be certified by the stamp of a qualified professional.**

This first level of information is required of all proposed subdivision [site plan review] applications. It involves the on-site delineation of wetlands and surface waters existing on the subject property. All subdivision [site plan review] applications are required to show the location and extent of wetlands and surface waters on the parcel or parcels under consideration, directly on the plan. Wetland and water body information is intended to demarcate the upland portions of a property on the site. This allows the board to know the location of the more sensitive natural resources and to determine if the development structures are proposed to be sited in or near them.

✱ **Step A:** Wetlands are to be identified and delineated according to the following standards and/or methodologies:

- Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, Environmental Laboratory, Department of the Army, 1987.
- Field Indicators for Identifying Hydric Soils in New England, Version 2, New England Interstate Water Pollution Control Commission, 1998.
- Chapters Wt 100-800 of the NH Code Of Administrative Rules, April 21, 1997.

These standards and/or methodologies are consistent with applicable state and federal regulatory requirements. They are recommended for use where existing mapped information is not adequate for site specific land use decision making.

✱ **Step B:** Surface Waters are to be identified and delineated in accordance with RSA 485 - A:2, XIV, NH Water Pollution and Waste Disposal and NH code of administrative rules pursuant to 485 - A.

These standards and/or methodologies are consistent with applicable state regulatory requirements.

✱ **Step C:** Written Documentation

- A written statement shall be included on the subdivision plan [site plan], **certified by the stamp of the Certified Wetland Scientist (CWS) or Permitted Septic Designer (PSD), that all wetlands and surface waters on-site have been delineated in accordance with the standards specified in Steps A and B above.**

This statement assures the planning board that the certified or permitted professional preparing the Step C information has adhered to the required standards.

Figure 1. Section 3 Submission Process

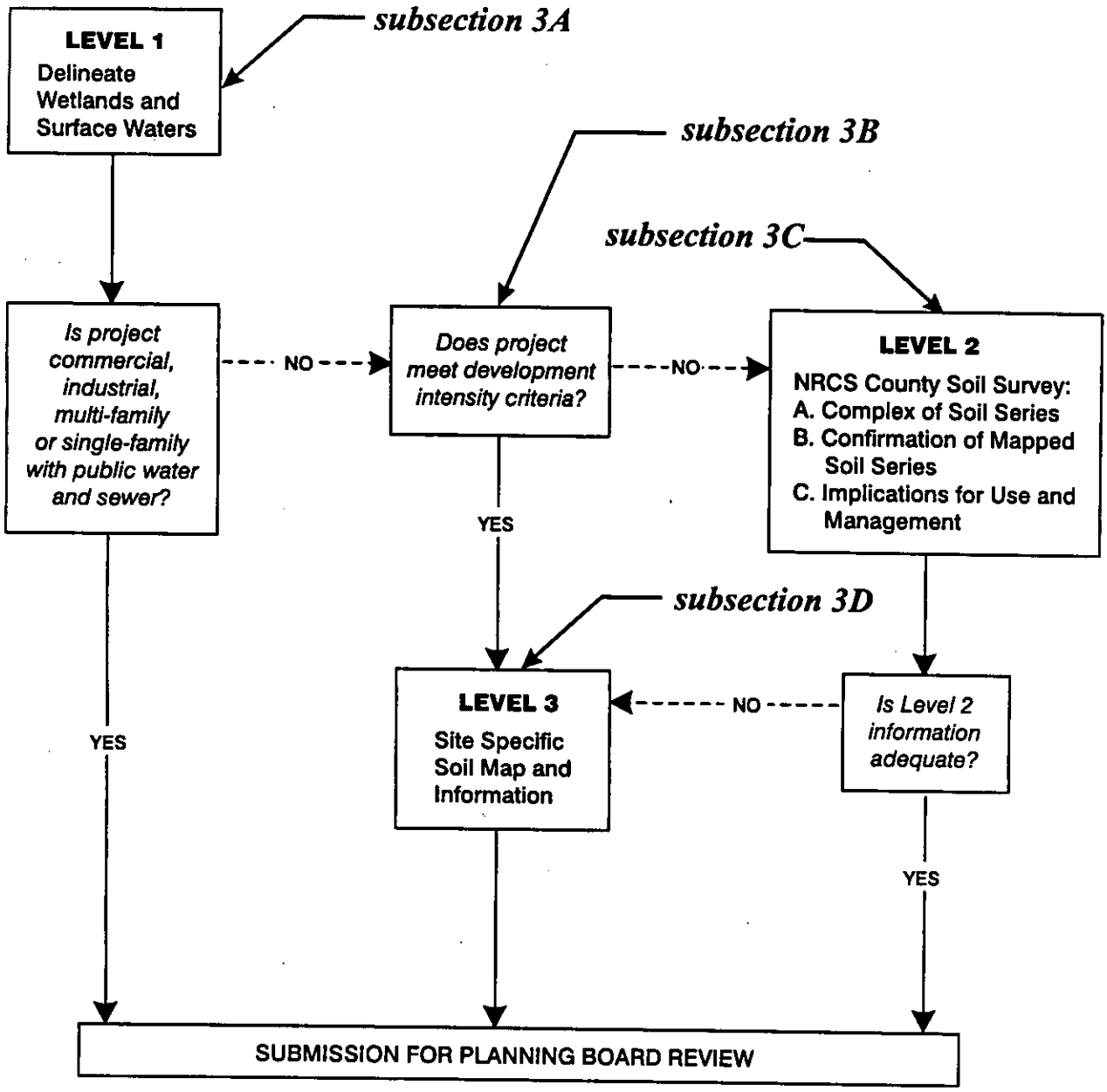


Figure 2. Levels of Information for Subdivision and Site Plan Applications

LEVEL	TASKS	STANDARDS	QUALIFICATIONS
1	**Step A.** Wetlands Delineation	• 1987 US Army Corps of Engineers Wetlands Delineation Manual • 1998 Field Indicators for Identifying Hydric Soils for New England	Certified Wetland Scientist, or Permitted Septic Designer*
	Step B. Surface Waters Delineation	• Defined by RSA 485-A:2, XIV	
2	**Step A.** Identification of Dramatically Different Soil Complexes	• Appendix 1 of this document. • NRCS Official Series Description Sheets and/or NRCS published map unit descriptions (Steps A-C).	Certified Soil Scientist or Permitted Septic Designer*
	Step B. Confirmation of NRCS Soil County Soil Survey Map	• Field Book for Describing and Sampling Soils: Vers. 1.1, 1998 • Site Specific Soil Mapping Standards for NH & VT, 1999 • Keys to Soil Taxonomy, Eighth Edition, 1998	
	Step C. Identification of Limiting Physical Features	• Same as Step B	
3	Site Specific Soil Map, when: a. Average lot size <2 acres, without municipal water and sewer, or b. Average lot size <1 acre, with municipal water, but without municipal sewer, or c. Non-limiting, non-wetland contiguous area <20,000 square feet and without municipal water and sewer, or d. Areas without municipal water and sewer and with soil complexes with dramatically different characteristics.	• Site Specific Soil Mapping Standards for NH & VT, 1999	Certified Soil Scientist
	*Per RSA 310-A:79, IV and NH Code of Administrative Rules Chapters Env-Ws 1000 adopted under RSA 485-A for the purpose of septic system design or subdivision applications.		

3B: Additional Information Required Based on the Type of Proposal

1. [If a project proposed for site plan review is served by public water and sewer, **no additional soils data needs to be submitted for the purpose of determining suitability of the site for subsurface wastewater disposal systems.]**

   In these cases, on-site wastewater disposal is not an issue and other limiting features should be addressed as part of the plan. ***However, the planning board may, at its discretion, require submission of on-site soils data for other purposes.***

   Additionally, if the site development calls for structures and/or impervious cover or alteration of an area greater than 100,000 square feet, or 50,000 square feet within the protected shoreland, then the applicant should file a site specific application under **NH Code of Administrative Rules Env-Ws 415 and RSA 485-A:17, significant alteration of terrain. Approval of the permit specified in these rules and statute is required by DES.**

   The planning board can be assured that the appropriate level of technical information and design criteria are applied to the project through this state permitting program. ***Proof of a state approved permit under this program can be required as a condition of final local approval of the subdivision plan [site plan].***

2. If a project involves a subdivision which is served by public water and sewer, no additional soils data needs to be submitted for the purpose of determining suitability of the site for subsurface wastewater disposal systems.

   In these cases, on-site wastewater disposal is not an issue and other limiting features should be addressed as part of the plan. ***However, the planning board may, at its discretion, require submission of on-site soils data for other purposes.***

3. If the project meets at least one of the following three development intensity criteria, **then the applicant should submit Site Specific Soil Map (SSS Map) information as specified in subsection 3D:**

   See the definitions of "average area" and "non-limiting" in Section 2.

   a. The average area is less than two (2) acres in area and is not served by either municipal water or sewer,

b. The average area is less than one (1) acre in area and is served by municipal water, but not sewer; or

c. The non-limiting, upland, contiguous area on any proposed lot is less than 20,000 square feet. (Can only be determined after completion of the requirements in subsection 3C, Level 2.)

4. **For all other projects, the applicant should comply with the data requirements of Section 6, Level 2.**

This provides for the planning board to require more detailed information for projects with a higher development intensity.

If the proposal does not meet any of the tests in subsection 3B then subsection 3C, Level 2 information is potentially adequate for local review, provided that the NRCS soil survey information is determined to be sufficient for the proposed use and management of the property. ***However, the planning board may, at its discretion, require submission of a site specific soil map for other purposes.***

3C: Level 2 Confirmation of County Soil Survey Maps and Identification of Limiting Physical Features

The applicant is required to submit existing data, such as soil maps representing the NRCS county soil survey, and evaluate detailed soil profile descriptions to corroborate the soil series and map unit determination from the county soil survey.

✱ **Step A:** Identification of Soil Complexes With Dramatically Different Characteristics

- If any of the soil map units on the property, as mapped by the NRCS county soil survey, is a complex of soils with dramatically different characteristics that would have an impact on use and management of the property, then the applicant must provide SSSMS information as required in subsection 3D, Level 3.

Appendix 1 of the document entitled DATA REQUIREMENTS FOR SITE REVIEW: GUIDANCE FOR PLANNING BOARDS, DES and OSP, 1999, prepared by the NRCS State Soil Scientist, lists these complex soil map units.

- If the soils mapped by the NRCS county soil survey do not include one of these complexes, **continue to Step B.**

✱ **Step B:** Confirmation of NRCS County Soil Survey Map

The following information is required to be submitted for confirmation of the NRCS county soil survey:

- A copy of the NRCS county soil survey with the subdivision [site plan] location and approximate boundaries superimposed on the soil map. **The copy of the county soil survey must be provided at the same scale as the original county soil survey.** This is important, so that the limitations of the information provided at the scale of the survey are not misunderstood by the users.

This is required to show the planning board the location of the proposal relative to the soils identified in the county soil survey .

- A representative number of detailed soil profile descriptions to characterize variations in the landscape for each mapped unit, based on NRCS standards as described in the Field Book for Describing and Sampling Soils: Version 1.1 National Soil Survey Center, NRCS, 1998. These profile descriptions are to be included in a narrative report for the project.

The applicant is required to evaluate and submit detailed soil profile descriptions to document that the conditions on site **are adequate to support the proposed use and management of the property. The standards and/or methodologies for doing this are listed below. These sources should be cited directly on the subdivision plan [site plan].**

This is required to give the planning board a general idea as to whether the soil conditions on the site are consistent with those of the soil series mapped in the County Soil Survey.

It is expected that there will be variations in soil conditions within any mapped unit. This evaluation is required to give the planning board an indication as to whether these variations would have an impact or present limitations for the proposed use and management of the property.

If the proposal meets the requirements of Step B, then subsection 3C, Level 2 information is potentially adequate for local review, provided that the NRCS soil survey information is determined to be sufficient for the proposed use and management of the property.

The planning board may, at its discretion, require submission of on-site soils data for other purposes.

Standards

These are the most current, technically accurate sources for use in describing soils.

Field Book for Describing and Sampling Soils: Version 1.1 National Soil Survey Center, NRCS, 1998. (To replace the dated, 1991 Soil Manual for Site Evaluation in New Hampshire, 2nd Edition)

NRCS Official Series Description Sheets and/or published map unit descriptions USDA/NRCS

Keys to Soil Taxonomy, Eighth Edition, USDA/NRCS 1998.

(or the most current revision of these sources)

Methodologies

A minimum of one soil profile description shall be completed per soil map unit within the subdivision plan [site plan] area, as depicted on the NRCS county soil survey. The soil will be described in sufficient detail, so as to support or refute that identified properties are within, or similar to those of the soil series used to name the map unit.

Three examples of suggested documentation for NRCS soil map confirmation for Step B are presented in Appendix 3 of the document entitled DATA REQUIREMENTS FOR SITE REVIEW: GUIDANCE FOR PLANNING BOARDS, DES and OSP, 1999.

Soils descriptions should be carried out in areas suspected of having the greatest likelihood of contrasting soil features. Some map units will require more than one soil description to document soil variability. The map unit purity standards from Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999, will apply.

- The location(s) of the soil profile description(s) used to corroborate the NRCS soil series shall be shown on the plan, with a reference to the description(s) in the narrative report for the project.
- A detailed comparison between each soil profile description and the representative pedon (a description of a small three-dimensional area of soil that is typical of the soil series in the county) for that soil from the county soil survey shall be included in the detailed narrative for the project. The NRCS Official Series Description Sheets and/or NRCS published map unit descriptions for each mapped unit are to be used as references.
- A written statement that the soil profile description(s) from the site adequately reflect the range of characteristics for the series, as described in the county soil survey. The statement shall indicate that the county soil survey adequately represents soil and landscape characteristics, such that site specific land use decisions can be made without further soil investigations. **This statement is to be certified by the stamp of the CSS or PSD. If this statement cannot be made, proceed to subsection 3D, Level 3.**

This statement assures the planning board that the certified or permitted professional preparing this information has adhered to the required standards.

- A narrative report for the project which summarizes the information compiled in Step B. This shall include a determination of whether limiting physical features are present on the parcel and indicate the specific mapped soil units where these occur. **If any limiting physical features are identified on-site, then Step C is required.**

This statement and narrative report assure the planning board that the certified or permitted professional preparing the Step B information has adhered to the required standards.

- If the on-site investigations confirm the nature and properties of the soils as reflected by the soil map, consistent with the intended use and intensity of development, **a subsection 3C, Level 2 review is potentially adequate for the planning board's purposes. However, the planning board may, at its discretion, require submission of on-site soils data.**

✱ **Step C:** Identification of Limiting Physical Features

In addition to the information required in Steps A and B, the information specified below is required for identification and documentation of limiting physical features. This can either be done as a stand-alone document or as an amendment or addendum to the narrative prepared under Step B.

If the on-site soil investigations indicate that limiting physical features, as defined in Section 2, which have the potential to affect the usability of certain areas for structures, on-site wastewater disposal systems, or roads, they must be identified and documented by the applicant. This information should be shown on the subdivision plan [site plan] and included in the narrative report for the project.

- Delineation of the limiting features, specifically rock outcrops, steep slopes > 35%, soils with bedrock within 18 inches of the soil surface, and very poorly drained areas on-site. These features are to be shown on the subdivision plan [site plan].

If the on-site soil investigations indicate that limiting physical features which have the potential to affect the usability of certain areas for structures, on-site wastewater disposal systems, or roads, they must be identified and documented by the applicant. The terms used to describe the limiting physical features are defined in Section 2.

- A detailed description of each limiting physical feature, based on NRCS standards, in a narrative report for the project, with reference to its location on the subdivision plan [site plan]. This can either be done as a stand-alone document or as an amendment or addendum to the narrative prepared under Step B.
- A written statement that the limiting physical features identified above would not have a significant impact on use and management of the property. **This statement is to be certified by the stamp of the Certified Soil Scientist (CSS) or Permitted Septic Designer (PSD). If this statement cannot be made, then proceed to subsection 3D, Level 3.**

These statements and the detailed description in the narrative report for the project assure the planning board that the certified or permitted professional preparing the information required for subsection 3C, Level 2, Step C has adhered to the required standards.

- A written statement to indicate that the county soil survey adequately represents soil and landscape characteristics such that site specific land use decisions can be made without further soil investigations. **This statement is to be certified by the stamp of the CSS or PSD. If this statement cannot be made, then proceed to subsection 3D, Level 3.**
- A written statement that limiting physical features are present on the parcel(s) and that **either (1) a SSS Map (Section 7) is required or (2) not required, with supporting documentation for this position. This determination is to be certified by the stamp of the CSS or PSD. If a SSS Map is required, then proceed to Section 7, Level 3.**

These statements assure the planning board that the certified or permitted professional preparing this documentation has evaluated the information in accordance with the required standards.

3D: Level 3, Site Specific Soil (SSS) Map for Intense Development and for Sites With Limiting Features

If required, an applicant shall submit a site specific soil map prepared in accordance with Site Specific Soil Mapping Standards for New Hampshire and Vermont Version 2.0, Society of Soil Scientists of Northern New England Publication No. 3, 1999. **This is to be certified by the stamp of the Certified Soil Scientist (CSS).**

This assures the planning board that the certified professional has adhered to the required standards.

Voting Sheets

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS AND ADMINISTRATION

EXECUTIVE SESSION on SB 181-FN

BILL TITLE: **relative to the licensure of geologists.**

DATE: 4/11/2000

LOB ROOM: 202

Amendments:

Sponsor: Rep. Landers OLS Document #: 4038h

Sponsor: Rep. Ed+A – Goulet OLS Document #: 4087h - replaces 4038h

Passed

Sponsor: Rep. ALIDA OLS Document #:

(1) **Motions:** OTP, OTP/A, ITL, Re-Refer, Interim Study (Please circle one.)

Moved by Rep. Landers (4) Goulet

Seconded by Rep. Goulet Holly

Vote: (Please attach record of roll call vote.)

(2) **Motions:** OTP, OTP/A, ITL, Re-Refer, Interim Study (Please circle one.) TABLE 16-2

Moved by Rep. O'Neil - (3) Goulet to remove from TABLE

Seconded by Rep. Holly

Vote: (Please attach record of roll call vote.)

CONSENT CALENDAR VOTE:

(Vote to place on Consent Calendar must be unanimous.)

Statement of Intent: Refer to Committee Report

Respectfully submitted,

Rep. ~~Ray F. Langer~~, Clerk

NANCY STICKNEY, ACting

OFFICE OF THE HOUSE CLERK

2000 SESSION

EXECUTIVE DEPARTMENTS AND ADMINISTRATION

Bill #: SB 181-FN **Title:** Relative to the licensure of geologists

PH Date: / / **Exec Session Date:** 4 / 11 / 2000

Motion: OTPA **Amendment #:** 4087h

MEMBER	YEAS	NAYS
Mercer, Robert S, Chairman		
Goulet, Maurice E, V Chairman	1	
Dyer, Merton S	1	
Langer, Ray F, Clerk		
Holley, Sylvia A	1	
Moore, Benjamin E		
Dickinson, Howard C		
Stickney, Nancy C	1	
Sapareto, Frank V		
Hamel, Albert W	1	
Millham, Alida I	1	
O'Neil, Michael		
Poulin, Dave G		
Zolla, William R	1	
Murphy, Robert E	1	
Reidy, Frank J	1	
Virtue, Carolyn A		1
Batchelder, Robert C	1	
Burkush, James A		1
Courchesne, Judy A		
Landers, Dana L		
Lent, Donald R	1	
	11 —	2
TOTAL VOTE:		

Printed: 12/30/1999

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS AND ADMINISTRATION

EXECUTIVE SESSION on SB 181

BILL TITLE: relative to licensure of geology

DATE: 4/24/2000

LOB ROOM:

Amendments:

(2) Sponsor: Rep. Virtue OLS Document #: 4246h Adopted/Failed

(4) Sponsor: Rep. Dyer OLS Document #: original 4246h Adopted/Failed ~~Hillstrom~~

(6) Sponsor: Rep. _____ OLS Document #: _____ Adopted/Failed

Motions: OTP, OTP/A, ITL, Re-Refer, Interim Study (Please circle one.) reconsideration hand vote 9-7

(1) Moved by Rep. Dickinson, Virtue

Seconded by Rep. Murphy

Vote: _____ (Please attach record of roll call vote.)

Motions: OTP, OTP/A, ITL, Re-Refer, Interim Study (Please circle one.)

(3) Moved by Rep. Dyer - Hall

Seconded by Rep. Hall, move question

Vote: _____ (Please attach record of roll call vote.)

(5) Vote 2nd Pg B
Virtue layon
Murphy - table

CONSENT CALENDAR VOTE: _____

(Vote to place on Consent Calendar must be unanimous.)

Statement of Intent: Refer to Committee Report

Respectfully submitted,

Rep. Ray F. Langer, Clerk

Removed from table 5-2-2000 unanimously Voted see new sheet.

A

EXECUTIVE DEPARTMENTS AND ADMINISTRATION

Bill #: SB 181 **Title:** relative to the licensure of geologists

PH Date: ___/___/___ **Exec Session Date:** 4/24/2000

Motion: OTPA- **Amendment #:** 4246h

MEMBER	YEAS	NAYS
Mercer, Robert S, Chairman		
Goulet, Maurice E, V Chairman		1
Dyer, Merton S		1
Langer, Ray F, Clerk		
Holley, Sylvia A		1
Moore, Benjamin E	1	
Dickinson, Howard C	1	
Stickney, Nancy C		1
Sapareto, Frank V		
Hamel, Albert W		1
Millham, Alida I		1
O'Neil, Michael		
Poulin, Dave G		1
Zolla, William R		1
Murphy, Robert E	1	
Reidy, Frank J	1	
Virtue, Carolyn A	1	1
Batchelder, Robert C		1
Burkush, James A		
Courchesne, Judy A		
Landers, Dana L		1
Lent, Donald R	1	
	6	10

TOTAL VOTE:
Printed: 12/30/1999

OFFICE OF THE HOUSE CLERK

2000 SESSION

EXECUTIVE DEPARTMENTS AND ADMINISTRATION

Dyer B

Bill #: SB 181 Title: relative to the licensure of ecologists

PH Date: / / Exec Session Date: 4 / 24 / 2000

Motion: Lay on Table Amendment #: 4087 from House floor

MEMBER	YEAS	NAYS
Mercer, Robert S, Chairman		
Goulet, Maurice E, V Chairman		1
Dyer, Merton S		1
Langer, Ray F, Clerk		
Holley, Sylvia A		1
Moore, Benjamin E		
Dickinson, Howard C	1	
Stickney, Nancy C		1
Sapareto, Frank V		
Hamel, Albert W		1
Millham, Alida I		1
O'Neil, Michael		
Poulin, Dave G	1	
Zolla, William R		1
Murphy, Robert E	1	
Reidy, Frank J	1	
Virtue, Carolyn A	1	
Batchelder, Robert C	1	
Burkush, James A		
Courchesne, Judy A		
Landers, Dana L	1	
Lent, Donald R	1	
	8	7
TOTAL VOTE:		

Printed: 12/30/1999

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS AND ADMINISTRATION

EXECUTIVE SESSION on SB181

BILL TITLE: Geology

DATE: 5-2-2000

LOB ROOM: 202

this is intended to supercede 4087h ??

Amendments:

Sponsor: Rep. Virtue OLS Document #: 4307h Adopted/Failed Y-4 N-13

Sponsor: Rep. ED&A OLS Document #: 4300h Adopted/Failed Y- N- OK

Sponsor: Rep. _____ OLS Document #: _____ Adopted/Failed

Motions: OTP, (OTP/A), ITL, Re-Refer, Interim Study (Please circle one.)

Moved by Rep. Dyer

Seconded by Rep. Goulet

Vote: 14-3 (Please attach record of roll call vote.)

Motions: OTP, OTP/A, ITL, Re-Refer, Interim Study (Please circle one.)

Moved by Rep. _____

Seconded by Rep. _____

Vote: _____ (Please attach record of roll call vote.)

CONSENT CALENDAR VOTE: _____

(Vote to place on Consent Calendar must be unanimous.)

Statement of Intent: Refer to Committee Report

Respectfully submitted,

Rep. Ray F. Langer, Clerk

.EXECUTIVE DEPARTMENTS AND ADMINISTRATION

Bill #: SB 181 Title: _____

PH Date: ____/____/____ Exec Session Date: ____/____/____

Motion: OTP/A Amendment #: _____

MEMBER	YEAS	NAYS
Mercer, Robert S, Chairman		
Goulet, Maurice E, V Chairman	1	
Dyer, Merton S	2	
Langer, Ray F, Clerk	3	
Holley, Sylvia A	4	
Moore, Benjamin E		1
Dickinson, Howard C		2
Stickney, Nancy C	5	
Sapareto, Frank V		
Hamel, Albert W	6	
Millham, Alida I	7	
O'Neil, Michael	8	
Poulin, Dave G		
Zolla, William R	9	
Murphy, Robert E	10	
Reidy, Frank J		
Virtue, Carolyn A		3
Batchelder, Robert C	11	
Burkush, James A	12	
Courchesne, Judy A		
Landers, Dana L	13	
Lent, Donald R	14	
	14	3

TOTAL VOTE:
Printed: 12/30/1999

EXECUTIVE DEPARTMENTS AND ADMINISTRATION

Bill #: SB 181 **Title:** _____

PH Date: 5 / 2 / 00 **Exec Session Date:** ___ / ___ / ___

Motion: _____ **Amendment #:** _____

MEMBER	YEAS	NAYS
Mercer, Robert S, Chairman		
Goulet, Maurice E, V Chairman		1
Dyer, Merton S		2
Langer, Ray F, Clerk		3
Holley, Sylvia A		4
Moore, Benjamin E		6
Dickinson, Howard C	1	
Stickney, Nancy C		6
Sapareto, Frank V		
Hamel, Albert W		7
Millham, Alida I		8
O'Neil, Michael		9
Poulin, Dave G		
Zolla, William R		10
Murphy, Robert E	2	
Reidy, Frank J		
Virtue, Carolyn A	3	
Batchelder, Robert C		11
Burkush, James A	4	
Courchesne, Judy A		
Landers, Dana L		12
Lent, Donald R		13
	4	13

TOTAL VOTE:
Printed: 12/30/1999

Committee Report

COMMITTEE REPORT

COMMITTEE: **Executive Departments and Administration**

BILL NUMBER: **SB 181-FN**

TITLE: relative to the licensure of geologists.

DATE: April 11, 2000 CONSENT CALENDAR YES ☐ NO ☒

☐ OUGHT TO PASS

☒ OUGHT TO PASS WITH AMENDMENT

☐ INEXPEDIENT TO LEGISLATE

☐ RE-REFER

☐ REFER TO COMMITTEE FOR INTERIM STUDY
(Available only in second year of biennium.)

STATEMENT OF INTENT
(Include Committee Vote)

This bill establishes the board of professional geologists and authorizes the regulations of the practice, examination, licensure, and discipline of professional geologists. The professional geologists will become part of the joint board of professional engineers, architects, land surveyors, foresters and natural scientists. The amendment reflects a carefully crafted approach to "grandfathering" of geologists. The amendment was agreed to by the professional engineers and the professional geologists.

Vote 11-2.

Rep. Alida I. Millham
FOR THE COMMITTEE

Original: House Clerk
cc: Committee Bill file

USE ANOTHER REPORT FOR MINORITY REPORT

Executive Departments and Administration

SB 181-FN, relative to the licensure of geologists. OUGHT TO PASS WITH AMENDMENT

Rep. Alida I. Millham for Executive Departments and Administration: This bill establishes the board of professional geologists and authorizes the regulations of the practice, examination, licensure, and discipline of professional geologists. The professional geologists will become part of the joint board of professional engineers, architects, land surveyors, foresters and natural scientists. The amendment reflects a carefully crafted approach to "grandfathering" of geologists. The amendment was agreed to by the professional engineers and the professional geologists Vote 11-2.

MAJORITY
COMMITTEE REPORT

COMMITTEE: **Executive Departments and Administration**

BILL NUMBER: **SB 181-FN**

TITLE: relative to the licensure of geologists.

DATE: May 4, 2000 CONSENT CALENDAR YES ☐ NO ☒

☐ OUGHT TO PASS

☒ OUGHT TO PASS WITH AMENDMENT

☐ INEXPEDIENT TO LEGISLATE

☐ RE-REFER

☐ REFER TO COMMITTEE FOR INTERIM STUDY
(Available only in second year of biennium.)

STATEMENT OF INTENT
(Include Committee Vote)

This bill establishes the board of professional geologists and authorizes the regulations of the practice, examination, licensure, and discipline of professional geologists. The professional geologist will become part of the joint board of professional engineers, architects, land surveyors, foresters and natural scientists.

Vote 14-3.

Rep. Alida I. Millham
FOR THE MAJORITY

Original: House Clerk
cc: Committee Bill file

USE ANOTHER REPORT FOR MINORITY REPORT

Executive Departments and Administration

SB 181-FN, relative to the licensure of geologists. OUGHT TO PASS WITH AMENDMENT

Rep. Alida I. Millham for Executive Departments and Administration: This bill establishes the board of professional geologists and authorizes the regulations of the practice, examination, licensure, and discipline of professional geologists. The professional geologist will become part of the joint board of professional engineers, architects, land surveyors, foresters and natural scientists. Vote 14-3.

MAJORITY

COMMITTEE REPORT

COMMITTEE: **Executive Departments and Administration**

BILL NUMBER: **SB 181-FN**

TITLE: relative to the licensure of geologists.

DATE: April 11, 2000 CONSENT CALENDAR YES ☐ NO ☒

☐ OUGHT TO PASS

☒ OUGHT TO PASS WITH AMENDMENT

☐ INEXPEDIENT TO LEGISLATE

☐ RE-REFER

☐ REFER TO COMMITTEE FOR INTERIM STUDY
(Available only in second year of biennium.)

STATEMENT OF INTENT
(Include Committee Vote)

This bill establishes the board of professional geologists and authorizes the regulations of the practice, examination, licensure, and discipline of professional geologists. The professional geologists will become part of the joint board of professional engineers, architects, land surveyors, foresters and natural scientists. ~~The amendment reflects a carefully crafted approach to "grandfathering" of geologists. The amendment was agreed to by the professional engineers and the professional geologists.~~

Vote 11-2.

Rep. Alida I. Millham
FOR THE COMMITTEE

Original: House Clerk
cc: Committee Bill file

USE ANOTHER REPORT FOR MINORITY REPORT

OK RSH

MINORITY
COMMITTEE REPORT

COMMITTEE: **Executive Departments and Administration**

BILL NUMBER: **SB 181-FN**

TITLE: relative to the licensure of geologists.

DATE: May 4, 2000 CONSENT CALENDAR YES ☐ NO ☒

☐ OUGHT TO PASS

☐ OUGHT TO PASS WITH AMENDMENT

☐ INEXPEDIENT TO LEGISLATE

☐ RE-REFER

☒ REFER TO COMMITTEE FOR INTERIM STUDY
(Available only in second year of biennium.)

STATEMENT OF INTENT
(Include Committee Vote)

SB 181-FN establishes licensure for professional geologists, a profession not currently regulated in New Hampshire. The requirements for licensure (RSA 310-A:125,I(a)) includes in addition to education, presentation of "evidence suitable to the board of at least 5 years of experience in the practice of geology, of which at least 3 years must have been under the supervision of a licensed professional geologist or a geologist who otherwise meets the requirements of a licensed professional geologist as determined by the board." The "grandfather clause" (RSA 310-A:125,II) states "Following the effective date of the initial adoption by the board of rules under RSA 541-A, the board may issue licenses without examination to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rules and who either meet the education and experience requirements of subparagraph I(a) of this section, or who provide evidence satisfactory to the board of knowledge and experience equivalent to such requirements." which is also referenced in (RSA 310-A:125,I(b)) "Experience in the practice of geology, obtained before the expiration of the period described in paragraph II of this section, may count towards the experience in the practice of geology under the supervision of a professional geologist required in subparagraph I (a) of this section if the supervising geologist met the education and experience qualifications of paragraph II at the time of the relevant experience. For purposes of this section, experience in the practice of geology does not include routine sampling, laboratory work or geological drafting." The minority is very concerned that few, if any, geologists currently practicing in New Hampshire would meet these requirements SB 181-FN also provides for certificates and seals and requires that they be applied to all documents involving the practice of geology when issued or filed for public record. This requirement will be just another beaurecratic expense for the residents of New Hampshire. The issue of the grandfather clause and expense to the citizens deserves further consideration, while the geologists continue to practice in New Hampshire, just as they have been.

Vote 3-14.

Executive Departments and Administration

SB 181-FN, relative to the licensure of geologists. REFER TO COMMITTEE FOR INTERIM STUDY

Rep. Carolyn A. Virtue for Executive Departments and Administration: SB 181-FN establishes licensure for professional geologists, a profession not currently regulated in New Hampshire. The requirements for licensure (RSA 310-A:125,I(a)) includes in addition to education, presentation of "evidence suitable to the board of at least 5 years of experience in the practice of geology, of which at least 3 years must have been under the supervision of a licensed professional geologist or a geologist who otherwise meets the requirements of a licensed professional geologist as determined by the board." The "grandfather clause" (RSA 310-A:125,II) states "Following the effective date of the initial adoption by the board of rules under RSA 541-A, the board may issue licenses without examination to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rules and who either meet the education and experience requirements of subparagraph I(a) of this section, or who provide evidence satisfactory to the board of knowledge and experience equivalent to such requirements." which is also referenced in (RSA 310-A:125,I(b)) "Experience in the practice of geology, obtained before the expiration of the period described in paragraph II of this section, may count towards the experience in the practice of geology under the supervision of a professional geologist required in subparagraph I (a) of this section if the supervising geologist met the education and experience qualifications of paragraph II at the time of the relevant experience. For purposes of this section, experience in the practice of geology does not include routine sampling, laboratory work or geological drafting." The minority is very concerned that few, if any, geologists currently practicing in New Hampshire would meet these requirements SB 181-FN also provides for certificates and seals and requires that they be applied to all documents involving the practice of geology when issued or filed for public record. This requirement will be just another beaurecratic expense for the residents of New Hampshire. The issue of the grandfather clause and expense to the citizens deserves further consideration, while the geologists continue to practice in New Hampshire, just as they have been Vote 3-14.

Rep. Carolyn A. Virtue
FOR THE MINORITY

Original: House Clerk
cc: Committee Bill file

USE ANOTHER REPORT FOR MINORITY REPORT

SB181 - Minority Report

Interim Study

(1)

SB181 ~~Sets~~ establishes licensure for professional geologists, a profession not currently regulated in NH. The requirements for licensure (RSA 310-A:125, I (a)) include in addition to education, presentation of

"evidence suitable to the board of at least 5 years of experience in the practice of geology, of which at least 3 years must have been under the supervision of a licensed professional geologist or a geologist who otherwise meets the requirements of a licensed professional geologist as determined by the board."

~~"Waiver"~~ The "grandfather" ~~clause~~ included in this bill (RSA 310-A:125, II) states

"II. Following the effective date of the initial adoption by the board of rules under RSA 541-A, the board may issue licenses without examination to applicants whose applications for licensure have been received during a one-year period following the effective date of adoption of rules and who either meet the education and experience requirements of subparagraph I(a) of this section, or who provide evidence satisfactory to the board of knowledge and experience equivalent to such requirements."

in (per 310-A:125, I (b))

(2)

(b) Experience in the practice of geology, obtained before the expiration of the period described in paragraph II of this section, may count towards the experience in the practice of geology under the supervision of a professional geologist required in subparagraph I(a) of this section if the supervising geologist met the education and experience qualifications of paragraph II at the time of the relevant experience. For purposes of this section, experience in the practice of geology does not include routine sampling, laboratory work or geological drafting. II.

The minority is very concerned ~~about~~ that few, if any, geologists currently practicing in NH would meet these requirements. ~~The~~ SB181 also provides for certificates and seals ~~for~~ and requires that they be applied to ~~by~~ all documents involving the practice of geology when issued or filed ~~for~~ public record. ~~which~~

could potentially be are concerned that this will be very costly for a resident to obtain this seal.

This requirement will be just another additional beaurecratic expense for the residents of NH. The issue of obtaining this grandfather clause and expense to the citizens deserves further consideration while the geologists continue drilling in NH, just as they

have been.

(1)

Carolyn A Kuelen

INTERIM STUDY
COMMITTEE REPORT

COMMITTEE: EXECUTIVE DEPARTMENTS & ADMINISTRATION

BILL NUMBER: SB 181

TITLE: relative to the licensure of geologists.

DATE: 24 OCTOBER 2000

☐ **RECOMMENDED FOR FUTURE LEGISLATION**

LSR No._____

(If legislation is already filed, please list LSR no.)

☒ **NOT RECOMMENDED FOR FUTURE LEGISLATION**

STATEMENT OF INTENT:

This year (2000) legislation was passed and signed into law by the Governor to license geologists. SB 181 was a comparable licensure bill that originated in the Senate and was deemed not necessary by a unanimous vote of ED & A.

COMMITTEE VOTE: 12-0

PLEASE NOTE:
- Reports are due **November 1, 2000**, at the House Clerk's Office with the committee voting sheet attached.
- Place a copy of the committee report and all subcommittee work documents in bill file.

Rep. Maurice E. Goulet
For the Committee

Rev. 6/5/00

Interim Study Report SB 181

OK RDM

NOT RECOMMENDED FOR FUTURE LEGISLATION

VOTE: 12-0

This years (2000) LEGISLATION WAS passed AND SIGNED INTO Law by the GOVERNOR to license GEOLOGISTS. SB 181 WAS a comparable that originated in the Senate and licensure Bill was deemed not necessary by a UNANIMOUS VOTE of S.D. & A.

Maurice E Goulet

Goulet

INTERIM STUDY
COMMITTEE REPORT

COMMITTEE: ED+A

BILL NUMBER: SB 181

TITLE:

DATE: 10-24-00

☐ **RECOMMENDED FOR FUTURE LEGISLATION**

LSR No._____ **(If legislation is already filed, please list LSR no.)**

☒ **NOT RECOMMENDED FOR FUTURE LEGISLATION**

STATEMENT OF INTENT: (May be handwritten)

COMMITTEE VOTE: 12-0 (Attach Committee Voting Sheet)

PLEASE NOTE:
- Reports are due **November 1, 2000**, at the House Clerk's Office with the committee voting sheet attached.
- Place a copy of the committee report and all subcommittee work documents in bill file.

Rep. _____
For the Committee

Rev. 6/5/00

EXECUTIVE DEPARTMENTS AND ADMINISTRATION

Bill #: SB181 Title: _____

PH Date: 10/24/00 Exec Session Date: ___/___/___

Motion: Not Recommended Amendment #: _____

MEMBER	YEAS	NAYS
Mercer, Robert S, Chairman	1	
Goulet, Maurice E, V Chairman	2	
Dyer, Merton S	3	
Langer, Ray F, Clerk	4	
Holley, Sylvia A	5	
Moore, Benjamin E	6	
Dickinson, Howard C	7	
Stickney, Nancy C		
Sapareto, Frank V		
Hamel, Albert W		
Millham, Alida I		
O'Neil, Michael		
Poulin, Dave G		
Zolla, William R		
Murphy, Robert E	8	
Reidy, Frank J	9	
Virtue, Carolyn A		
Batchelder, Robert C	10	
Burkush, James A	11	
Courchesne, Judy A		
Landers, Dana L		
Lent, Donald R	12	
	12	0

TOTAL VOTE:

Printed: 12/30/1999