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Chapter GHSS 3

PROFESSIONAL HYDROLOGIST LICENSE

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Note: Chapter GHSS 3 was created as an emergency rule effective May 15, 1999.

GHSS 3.01 Authority and purpose. The rules in this chapter are adopted under authority in ss. 15.08 (5) (b), 227.11 (2), 470.03 (1) (a) and 470.04, Stats. The purpose of the rules in this chapter is to interpret basic education, experience and examination requirements for licensure as a professional hydrologist as specified in ss. 470.04 and 470.05, Stats.

History: Cr. Register, December, 1999, No. 528, eff. 1-1-00.

GHSS 3.02 Applications. An applicant who files an application but does not comply with a request for information related to the application within one year from the date of the request shall file a new application.

Note: Applications are available upon request to the Professional Hydrologist Section of the board at 1400 East Washington Avenue, P.O. Box 8935, Madison, Wisconsin 53708.

History: Cr. Register, December, 1999, No. 528, eff. 1-1-00.

GHSS 3.03 Experience as a professional hydrologist. (1) To qualify as satisfactory professional hydrologic work for the purposes of s. 470.04 (3) (c), Stats., an applicant's experience shall include the application of accepted principles in the practice of hydrology and shall demonstrate an applicant's progressive development of competence to practice as a professional hydrologist. The experience shall be acquired in the areas of the practice of hydrology listed in sub. (2) (a) to (c), or in other areas of the practice of hydrology which in the opinion of the professional hydrologist section provide the applicant with a knowledge of principles and data related to the practice of hydrology at least equivalent to that which would be acquired by experience in the areas of practice listed. Experience in every listed area is not required.

(2) Areas of experience in the practice of professional hydrology include but are not limited to:

(a) Collection and inventory of hydrological data, including monitoring and characterizing surface and subsurface water quality and flow; monitoring precipitation quality, quantity and distribution; assessing surface and subsurface water quality, conditions and impacts; inventorying and assessing sources of water contamination; assessing conditions affecting surface and subsurface water quantity, quality and timing of flow; conducting field tests to determine the hydraulic characteristics of saturated and unsaturated media; inventorying channel and flood plain conditions affecting flow and habitat; inventorying physical, chemical or biological characteristics of lakes and wetlands; designing, installing and maintaining monitoring networks and equipment, such as stream gauges and monitoring wells, used to evaluate surface and subsurface water flow and quality; selecting sampling protocols for measuring surface and subsurface water; measuring surface water flow utilizing current meters and flow control structures; and conducting boring programs and tests to characterize conditions that affect subsurface water flow, contaminant flux, and the source and extent of subsurface contamination.

(b) Interpretation, analysis and modeling of hydrological processes, including estimating the frequency of hydrologic events; estimating water budgets of surface water and aquifer systems; estimating pollutant loads; modeling and assessing surface and subsurface water contaminant fate and transport; modeling and

assessing watershed hydrology; modeling and assessing urban watersheds and stream flow; modeling and assessing surface water quality, modeling and assessing soil erosion and sediment transport; delineating regulatory floodplains; interpreting water chemistry data; evaluating subsurface water flow and quality characteristics; evaluating subsurface water discharge and recharge areas and rates; modeling subsurface water flow, quality and transport; analyzing the hydraulic characteristics of saturated and unsaturated media; and evaluating subsurface contamination and remedial alternatives.

(c) Planning, design, and management of hydrological systems, including designing water control structures, designing watershed management plans, designing runoff and erosion control measures, designing slope stabilization measures, designing detention and retention ponds, designing urban storm water management plans, designing for stream bank and lakeshore protection, designing channels and stream restoration work, designing subsurface remediation systems, and designing water supply wells and wellhead protection plans.

(3) Not more than one year of satisfactory experience credit may be granted for any calendar year.

History: Cr. Register, December, 1999, No. 528, eff. 1-1-00.

GHSS 3.04 Education. (1) In satisfaction of the education requirement under s. 470.04 (3) (b), Stats., the professional hydrologist section shall accept a bachelor degree in hydrology or water resources, or a degree reflecting that the applicant has completed at least 30 semester hours or 45 quarter hours of course credits in hydrology or water resources of a variety and nature sufficient to constitute a major in hydrology or water resources, granted by a college or university accredited by a regional accrediting agency approved by the state board of education in the state in which the college or university is located, or accredited by a Canadian accrediting agency satisfactory to the board.

(2) If the degree is from an educational institution not meeting the requirements of sub. (1), the applicant shall provide an official evaluation by a transcript evaluation service acceptable to the professional hydrologist section which shows that the degree is equivalent to a bachelor degree in hydrology or water resources or a bachelor degree with a major in hydrology or water resources meeting the requirements under sub. (1).

(3) In order to be considered a major in hydrology, the applicant must have completed at least 12 semester hours or 18 quarter hours of course credits in hydrology or water resources in at least 3 of the following areas:

- (a) Contaminant surface and subsurface water hydrology.
- (b) Field methods in surface and subsurface water hydrology.
- (c) Fluid mechanics or dynamics.
- (d) Fluvial geomorphology.
- (e) Open channel flow and hydraulics.
- (f) Stochastic hydrology.
- (g) Subsurface water hydrology.
- (h) Subsurface water and well hydraulics.
- (i) Surface or subsurface water modeling.
- (j) Surface water hydrology.
- (k) Unsaturated zone hydrology.

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(L) Water resource management.

(4) In addition to the coursework required under sub. (3), other hydrology or water resource related coursework that may be used to satisfy the 30 semester hour or 45 quarter hour requirement include, but are not limited to, courses in the following areas:

- (a) Aquatic biology.
- (b) Engineering.
- (c) Environmental health and toxicology.
- (d) Forestry.
- (e) Geography.
- (f) Geology.
- (g) Limnology.
- (h) Meteorology.
- (i) Natural resources.
- (j) Soil science.
- (k) Water chemistry.

History: Cr. Register, December, 1999, No. 528, eff. 1-1-00.

GHSS 3.05 Examinations. (1) **REQUIRED EXAMINATIONS.** An applicant for initial licensure as a professional hydrologist shall pass examinations for the professional practice of hydrology approved by the professional hydrologist section. Required examinations shall include a fundamentals examination and a principles and practice examination.

(2) **FUNDAMENTALS EXAMINATION.** The fundamentals examination requires an understanding of the physical and mathematical sciences involved in the fundamentals of hydrology. To be eligible to take the fundamentals examination, an applicant shall have done one of the following:

(a) Completed at least 24 semester hours or 36 quarter hours of course credits in hydrology or water resources and be of not less than second semester senior standing in a bachelor program meeting the requirements of s. GHSS 3.04.

(b) Completed at least 4 years of experience which is determined by the professional hydrologist section to be equivalent to the requirements of s. GHSS 3.04.

(3) **PRINCIPLES AND PRACTICE EXAMINATION.** The principles and practice examination requires the ability to apply hydrologic principles and judgment to problems in the practice of professional hydrology. To be eligible to take the principles and practice examination, an applicant shall have done one of the following:

(a) To be eligible to take the principles and practice examination, an applicant under s. 470.04 (3) (c) 1., Stats., shall have done the following:

1. Met the requirements under s. 470.04 (3) (a), Stats.
2. Met the requirement under s. 470.04 (3) (b), Stats., or have at least 5 years of professional experience in addition to the qualifying experience under subd. 3., which is determined by the professional hydrologist section to be equivalent to the requirement under s. 470.04 (3) (b), Stats.

3. Completed at least 4 years of professional experience in hydrologic work of a character satisfactory to the professional hydrologist section, or completed at least 3 years of professional experience in hydrologic work of a character satisfactory to the section if the applicant has one or more advanced degrees relevant to the practice of professional hydrology, demonstrating that the applicant is qualified to assume responsible charge of hydrologic work. At least one year of the qualifying professional experience under this subdivision must have been performed under the supervision of one or more of the following:

a. A person who is at the time of application licensed as a professional hydrologist under this chapter or who, during the period of supervised experience, was licensed as a professional hydrologist under ch. 470, 1997 Stats.

b. A person who, during the period of supervised experience, was licensed as a professional hydrologist in another state, terri-

tory or possession of the United States or in another country that has licensure requirements for professional hydrologists that are not lower than the requirements for licensure under this chapter.

c. A person who, during the period of supervised experience, is deemed by the professional hydrologist section to have been qualified to have responsible charge of hydrologic work.

(b) To be eligible to take the principles and practice examination, an applicant under s. 470.04 (3) (c) 2., Stats., shall have done the following:

1. Met the requirements under s. 470.04 (3) (a), Stats.
2. Met the requirement under s. 470.04 (3) (b), Stats., or have at least 5 years of professional experience in addition to the qualifying experience under subd. 3., which is determined by the professional hydrologist section to be equivalent to the requirement under s. 470.04 (3) (b), Stats.

3. Completed at least 6 years of professional experience in hydrologic work of a character satisfactory to the professional hydrologist section, or completed at least 5 years of professional experience in hydrologic work of a character satisfactory to the section if the applicant has one or more advanced degrees relevant to the practice of professional hydrology, demonstrating that the applicant is qualified to assume responsible charge of hydrologic work. At least one year of the qualifying professional experience under this subdivision must have been performed under a peer review system approved by the professional hydrologist section.

(3m) **APPLICATION FOR EXAMINATION.** An applicant for initial licensure shall file an application for examination with the professional hydrologist section of the board not less than 2 months before the scheduled date of the examination.

(4) **AMERICANS WITH DISABILITIES ACT.** Otherwise qualified applicants with disabilities shall be provided with reasonable accommodations.

(5) **EXAMINATION AND REFUND FEES.** The fee for the examinations for professional hydrologists and the requirements for refund of fees are specified in s. 440.05, Stats., and ch. RL 4, respectively.

(6) **PLACE AND TIME OF EXAMINATIONS.** The examinations required by this section shall be held at sites and on dates designated by the professional hydrologist section.

(7) **PASSING SCORES.** (a) The passing scores set by the professional hydrologist section represent the minimum competency required to protect public health and safety.

(b) The fundamentals of hydrology and the principles and practice of hydrology examinations are scored separately. An applicant shall achieve a passing score on each of the required examinations to qualify for licensure.

(c) The professional hydrologist section shall make the determination of the passing score on each required examination after consultation with subject matter experts who have reviewed a representative sample of the examination questions and available candidate performance statistics.

(8) **CHEATING.** The professional hydrologist section may deny release of scores or issuance of a credential if the board determines that the applicant violated rules of conduct of the examination or otherwise acted dishonestly.

History: Cr. Register, December, 1999, No. 528, eff. 1-1-00, am. (2) (b) and (7) (b), Register, November, 2000, No. 539, eff. 12-1-00.

GHSS 3.06 Application contents. An application for licensure as a professional hydrologist shall include:

(1) Either of the following:

(a) Official transcripts of graduate and undergraduate training, properly attested to by the degree granting institution and submitted by the institution directly to the professional hydrologist section establishing that the applicant has been granted a bachelor degree in hydrology or water resources or a degree with a hydrology or water resources major meeting the requirements under s. 470.04 (3) (b), Stats., granted by a college or university accredited

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by a regional accrediting agency approved by the state board of education in the state in which the college or university is located, or accredited by a Canadian accrediting agency satisfactory to the board, or

(b) A chronological history of the applicant's employment or other qualifying experience in satisfaction of s. 470.04 (7), Stats.

(2) A chronological history of the applicant's employment or other qualifying experience in satisfaction of s. 470.04 (3) (c) 1. or 2., Stats.

(3) For applicants applying under s. 470.04 (3) (c) 1., Stats., a completed "supervised hydrologic experience" form completed by a supervisor relating to professional hydrology and who is one of the following:

(a) A professional hydrologist who, during the time of the supervised practice, was licensed in this state.

(b) A professional hydrologist who, during the time of the supervised practice, was licensed in another licensing jurisdiction that has licensure requirements not lower than the requirements for licensure in this state.

(c) A person who the professional hydrologist section determines is qualified to have responsible charge of hydrologic work.

(4) For applicants applying under s. 470.04 (3) (c) 2., Stats., submission of at least 3 "peer evaluation" forms satisfactory to the professional hydrologist section completed by licensed professional hydrologists who have had professional contact with the applicant's practice and who certify that the applicant is qualified to assume responsible charge of hydrologic work.

(5) References from at least 5 individuals, at least 3 of whom shall be professionally competent to evaluate the applicant's practice.

(6) The fee required under s. 440.05 (1), Stats.

(7) For applicants previously licensed in another state, territory or possession of the United States or in another country, verification of the applicant's licensure in the licensing jurisdiction of original licensure or, if the applicant has permitted his or her licensure in the jurisdiction of original licensure to lapse, verification of licensure in the licensing jurisdiction where the applicant is currently licensed and where the applicant was last engaged in the practice of professional hydrology.

(8) For applicants who have a pending criminal charge or have been convicted of a crime, all related information necessary for the professional hydrologist section to determine whether the circumstances of the pending criminal charge or criminal conviction are substantially related to the circumstances of the practice of hydrology.

(9) Any additional data, exhibits or references showing the extent and quality of the applicant's experience that may be required by the professional hydrologist section.

(10) Evidence of successful completion of fundamentals of hydrology and the principles and practice of hydrology examinations.

Note: Application forms, including the "Supervised Hydrologic Experience" form and the "Peer Evaluation" form are available upon request to the Professional Hydrologist Section of the board at 1400 East Washington Avenue, P.O. Box 8935, Madison, Wisconsin 53708.

History: Cr. Register, December, 1999, No. 528, eff. 1-1-00.