



ALBERTA INSTITUTE
OF AGROLOGISTS

2019

***Water Resources Planning and Management
Practice Standard***



Approved by AIA Council
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Preface

This practice standard is part of the continuing effort by the Alberta Institute of Agrologists (AIA) to meet its mandate as outlined in the *Agrology Profession Act*. The *Act* specifies that the Institute must establish, maintain and enforce standards of practice as part of the profession's obligation to protect the public in matters related to agrology.

This document was created by a Practice Area Expert Committee (PAEC) consisting of five regulated members of the AIA. Members were selected for their expertise and long-standing practice in water resources planning and management.

This practice standard is the basis upon which practice reviews will be conducted by the AIA. This document will assist members in ensuring that their professional practice meets the standards for knowledge, work experience, skills and performance required for professionals practicing in the Water Resources Planning and Management practice area.

This document will be reviewed on a periodic basis to ensure it is up to date with current standards and state of knowledge for the practice area.

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Acronyms

CKA	Core Knowledge Area
KR	Knowledge Requirement
PA	Practice Area
PAEC	Practice Area Expert Committee

1. INTRODUCTION

This practice standard applies to regulated members of the Alberta Institute of Agrologists (AIA) who practice or intend to practice in the "*Water Resources Planning and Management*" practice area (PA). It defines expectations and outlines requirements regarding professional practice within this area. Documentation of these requirements provides necessary assurance to the public that AIA has specific requirements for professional practice. This practice standard provides members a benchmark upon which to assess their practice and identify potential learning needs in their continuing competence program.

This practice standard is based on the premise that water resources planning and management are multidisciplinary activities. Practitioners are expected to understand the limit of their knowledge, skills and experience and seek expertise of other professionals where necessary.

This practice standard forms the basis for implementation of a practice review protocol for this PA. Members working within this PA will be able to request a review of their professional practice based on this practice standard. Such a review will provide valuable feedback to members for areas of improvement.

1.1. Objectives

The objectives of this practice standard include the following:

- To identify and define the knowledge, skills, experience and performance requirements for professional practice within the PA;
- To provide documentation of the requirements indicated above so regulated members of AIA may assess their practice against this standard and thereby identify learning needs to ensure they are in compliance with the standard;
- To provide a standard against which a member's professional practice may be reviewed by AIA to assist the member in identifying areas of their practice that may need improvement;
- To provide a mechanism whereby AIA can demonstrate that members within the profession are managed in a manner which protects the interests of the public in matters related to water resources planning and management.

1.2. Definitions

Competence: The ability to perform certain tasks in one's professional practice based on educational training, skills and work experience in a manner that meets performance objectives as defined in a practice standard.

Core Knowledge Area: A general area of knowledge consisting of one or more specialized subject matter areas that is required for practicing within a PA.

Direct Supervision: Guidance provided by a competent professional who accepts responsibility for work conducted by a less experienced professional.

Experience: Knowledge, practical wisdom or skills gained from observation and doing.

Performance: The exercise of knowledge in a professional practice that demonstrates the required ethical conduct and wise judgment as specified within a practice standard.

Practice Area: A unique functional area of professional practice within the agrology profession that requires specialized knowledge, based on education, work experience and skill sets.

Practice Area Expert Committee: A committee of experts who have demonstrated through their professional practice that they have a comprehensive understanding of the requirements for professional practice in a PA.

Practice Review: A process whereby a peer review panel examines a regulated member's professional practice against a practice standard, with the intent of providing input on practice improvement.

Practice Standard: A document that outlines the requirements and expectations for professional practice within a PA.

Professional Practice: The competent and ethical provision of specialized knowledge, recommendations and assessments based on educational training, work experience and skill sets while being accountable to peers as a regulated member of a professional regulatory organization.

Regulated Member: A member in good standing with the Alberta Institute of Agrologists who holds one of the following designations: PAg, RTAg, AIT or ATT.

Skill: An ability developed over multiple years of work experience.

Subject Matter Area: A specialized area of knowledge such as soil chemistry, plant physiology or hydrology required for professional practice within a PA.

2. SCOPE OF THE PRACTICE AREA

Understanding, planning and managing water resources and its integration with the surrounding environment is a fundamental part of Agrology in Alberta as water resources touch all aspects of the profession. There is not an area of Agrology where water is not a critical factor and therefore needs to be part of the thinking and decision-making of all Agrologists. Agrologists traditionally have focused on agricultural land use and its importance to agricultural production and this continues to be a major focus of Agrologists working in this practice area. In addition, the expertise of Agrologists is valuable to sustainable water resource management in a variety of other land use practices and may participate in flood forecasting, climatology, channel morphology, water quality, environmental flows, water approvals, etc.

Those Agrologists who work directly with water resources play a vital role in safeguarding both water quality and water quantity for all Albertans. As stewards of water resources, Agrologists play important roles in advising and educating users of this valuable resource. Agrologists working in this PA may be found working for government, industry, consulting, non-governmental and non-profit organizations. The common thread among these professionals is overseeing the wise use of water for the many competing uses of this resource, and understanding the potential impacts from, or interactions with or among, the diversity of land uses in Alberta.

The primary roles of Agrologists within this PA fall under the general titles of assessment, planning, stewardship and education. Each of these roles comprise portions of specific core activities within the PA including (i) watershed condition (health) assessment; (ii) development of watershed management plans; (iii) management of sustainable water supplies for various uses including agriculture, domestic supply, recreation, environmental flow needs (e.g. fisheries and aquatic life, wildlife habitat, etc.); (iii) policy development and regulatory requirements; (iv) education and improvement of water literacy; (vi) applied research.

Agrologists working within the Water Resources Planning and Management PA may provide professional support to Agrologists who are lead professionals within the Wetland and Riparian Area PA and/or those leading work within the Environmental Monitoring PA. Some Agrologists may be specialists in Water Resources Planning and Management, Wetland and Riparian Areas

and Environmental Monitoring PAs as there is significant overlap of knowledge and skills among these three PAs.

2.1 Core Activities Within the PA

The core activities listed below identify the main types of work conducted by Agrologists within this PA. The following descriptions provide a brief overview of the nature of each activity.

2.1.1 Assessing Watershed Condition

The fundamental unit for assessing, planning and managing water resources at the landscape scale is the watershed. The watershed represents an area bounded by a topographic divide (i.e. height of land) where water resources drain ultimately to a water body. It encompasses a diverse array of ecosystems and natural resources; human-derived infrastructure; and various land use and landcover types. As a result, the watershed must be approached as a whole, comprised of multiple integrated components.

The overall goal of watershed management is to ensure a healthy ecologically functioning watershed that meets human needs, provides ongoing ecological services and ensures that environmental flow needs are sustained. This requires both healthy functioning riparian areas as well as aquatic ecosystems within the watershed.

Agrologists play a key role in assessing watershed condition as their expertise includes system level and integrative thinking that seeks to understand the interaction among the various watershed components and how changes in these lead to changes in both water quantity and water quality. Agrologists assess the potential effects of agricultural and other land uses and establish the value of beneficial management practices on water resources. Agrologists also play a role in assessing land suitability for various uses of water within a watershed.

2.1.2 Watershed Management Planning

Watershed management planning follows assessment of watershed condition and generally involves collaboration of various practice area specialists. Management plans are developed to address existing and/or future land use effects on overall health of the watershed to ensure water quality and quantity (surface and groundwater), ecosystem functioning, and human use needs are protected and sustained over the long-term. Activities of watershed management planning include, setting goals/objectives and desired outcomes in consultation with various stakeholders; identifying and documenting land use effects on watershed health; development and recommendation of beneficial management practices (BMPs) to mitigate or enhance these effects; development of strategies for implementation of recommended BMPs; monitor and evaluate the success of the management plan and make changes to the plan as required.

2.1.3 Water Supply

Agrologists working within this PA may be directly involved in the assessment, evaluation and development of water supplies. This often involves working closely with engineers, hydrologists and hydrogeologists in water management planning, plan implementation and evaluation, and development of relevant policies. Evaluating the ability of the watershed to support the water demand (both surface and groundwater) and the potential effects of land use and climatic effects on the sustainability of the supply are often addressed by Agrologists. Agrologists play a vital role in contributing to planning water supply networks for irrigated cropping systems and agricultural feasibility. This includes, planning, establishing and monitoring irrigation water delivery and storage systems; evaluating land and water for irrigation suitability; and, the development of appropriate irrigation systems to meet crop water demands while ensuring water use efficiency and conservation.

Agrologists play a role in assessing and determining water supplies to meet various needs in the watershed including livestock operation needs, rural domestic water demands, dugout design,

etc. Agrologists work with hydrologists, hydrogeologists and engineers in hydroclimatic and runoff modeling that addresses water supply and distribution, as well as potential effects of non-point source pollution (e.g. runoff from manured or fertilized fields).

2.1.4 Regulatory and Policy

Alberta's "Water for Life" policy sets the direction for sustainable water management in the province of Alberta and forms the underlying philosophy for development of government regulations and policy. Many Agrologists work directly for government ministries and agencies responsible for developing and implementing regulations and policy to manage the public water resource. Policy and regulatory mechanisms are needed to balance the competing needs for a limited resource and at the same time facilitate the wise use of water for economic development.

Agrologists provide input into water quality standards, development of policy options based on sound analysis of environmental, economic and social information, review of regulatory applications and provision of policy advice and interpretation of the application of various Acts.

In addition, many non-governmental organizations, such as the WPACS (Watershed Planning and Advisory Councils) include Agrologists who provide advice and input to government regarding water and land use policy and associated regulations.

Agrologists work closely with the *Water Act (WA)*, the *Environmental Protection and Enhancement Act (EPEA)*, the *Alberta Land Stewardship Act (ALSA)*, the *Agricultural Operations Practices Act (AOPA)*, and the *Irrigation Districts Act (IDA)* to ensure their requirements regarding water use and protection are met and regulatory compliance is achieved. Agrologists are active in balancing the requirements of the regulatory and policy documents that influence water use in the province.; for example, Agrologists work closely in ensuring that requirements of irrigation and drainage districts, regional plans (e.g. Land Use Framework), wetland policy and statutory requirements of local government are addressed.

2.1.5 Education and Water Literacy

Agrologists participate in the education of various stakeholders regarding the use, protection and conservation of water resources. Agrologists working in this area strive to increase the water literacy of stakeholders to ensure long-term sustainability of water resources (both surface and groundwater). The goal of effective watershed management is to ultimately bridge society's understanding of where their water comes from, the value of local, regional, national and global water resources and the potential risks to current and future water supplies and water quality.

2.1.6 Applied Research

Many Agrologists are directly involved in applied research in water resources. Research results are used to identify the most effective uses of water resources, inform changes in government policy and regulations as well as to demonstrate the value of beneficial management practices to promote effective stewardship of water resources.

Applied research conducted by Agrologists is directed toward enhancing our understanding of water sources, transport, storage and use. Research topics are varied and some examples include: developing innovative assessment, prevention and mitigation methods for point and non-point pollution sources; effects of land use alterations on water runoff and quality; riparian area beneficial management practices; needs of environmental flows; ecosystem restoration (e.g. wetlands and riparian areas); and, sustainability of water allocation within a watershed, etc.

3. KNOWLEDGE REQUIREMENTS

Knowledge requirements are technical or scientific areas of knowledge that are important for a practitioner to possess to be fully functional within the PA. These are strongly associated with a

member's educational background and training. These requirements include core knowledge areas that consist of one or more subject matter areas that are foundational to the PA. The specification of subject matter areas within each required core knowledge area provides assurance that members working within a PA are aware of the knowledge required to provide professional services within the PA. Members are required to assess their knowledge against the core knowledge requirements; recognize the limits of their expertise; and seek direction and guidance from qualified professionals in areas where their own knowledge may be lacking.

3.1 Core Knowledge Areas

Several core knowledge areas have been identified as being foundational to practice within the PA (Table 1). These core knowledge areas include water; soils; vegetation; landscape; land use; ecology; socioeconomics and research and design. The rationale for each of these core knowledge areas follows below. The core knowledge areas (CKAs) listed below identify the specialized knowledge required to be fully functional as an Agrologist across all core activities of the PA.

It is important to realize that many of the CKAs are highly interdependent and that to be fully functional as a professional across all aspects of the PA requires knowledge within all the identified CKAs. Understanding the integration of water, soil, and vegetation and the effects of land use across the landscape is central to the practice of Agrology. Agrologists employ system level thinking to understand and predict how each individual component comprising the watershed interacts with each other and how they together react to changes in land use with the resulting effects on water quantity and quality.

3.1.1 Water

Knowledge of hydrologic processes such as water movement, storage and distribution of surface and groundwater within the land phase of the hydrologic cycle is fundamental knowledge necessary to understand the influence of activities on the land that may affect both water quantity and quality at the watershed level.

3.1.2 Landscape

A watershed, by definition, is delineated by a topographic divide. The distribution of different species of vegetation or different groups of soils within a watershed are often associated with topographic features (slopes, depressions). An understanding of how to interpret landscape features and the influence of those features on water storage and movement is important knowledge for watershed planning. In addition, Agrologists consider man-made infrastructure (canals, surface drains, reservoirs, etc.) when interpreting landscape features and the influence of these features on water storage and movement.

3.1.3 Soils

Agrologists require fundamental knowledge of the soil system, which is the interface within the hydrologic cycle between atmospheric and land processes (infiltration, percolation, surface runoff, sub-surface flows, erosion and sedimentation, ponding). It is important to recognize the influence of soil (soil texture, structure, genesis) on land processes, water availability and water quality.

3.1.4 Vegetation

Much of an Agrologist's focus is vegetation related, including crops, livestock feed, and native and non-native vegetation species. An understanding of plant growth related to availability of soil water, soil characteristics, topography and climate is fundamental knowledge required for understanding plant growth and the distribution of vegetation within a watershed. Vegetation

plays a key role in providing soil cover to reduce sedimentation, slow runoff, facilitate water infiltration into soil and evapotranspiration.

3.1.5 Land Use and Land Management

Land use describes the human activities on a landscape. Whether the land use is predominantly white area (private lands) or green area (public lands), influenced by agriculture, forestry or energy sectors, &/or the degree of development (e.g. built up/urban, recreational or transportation), land use can be diverse and complex. Land management practices dictated by, or appropriate for, a respective land use can further influence water infiltration/filtration, transport (e.g. run-off/run-on), storage, and resulting supply &/or quality. An understanding of the distinction between land use and land management is critical to assess how watershed issues can be mitigated or managed to achieve long-term sustainable outcomes in watershed health, water movement, retention and water quality.

3.1.6 Ecology

Ecology is the study of the interaction of organisms with each other and with their surrounding environment. Agrologists should understand the interaction of organisms with each other, the surrounding environment, and their interaction with the flow of water within that watershed. It requires understanding the watershed as a system that provides not only human water needs but also water needs of various organisms and their habitat.

3.1.7 Socioeconomics

The understanding of social, economic and environmental drivers is essential to assess the long-term sustainability of water resources. Agrologists must consider all three together when making decisions about the feasibility of various water projects as well as informing water-related legislation and policy.

3.1.8 Research and Design

Those Agrologists involved in water resources research bring an understanding of scientific principles and the scientific methods to gather and analyze data upon which recommendations and decisions about water quality and quantity can be made. Experimental design and statistical analyses are fundamental knowledge requirements for Agrologists conducting research if they are to produce credible data useful for informing decision-making.

Each of the core knowledge areas listed above consist of one or more subject matter areas. Subject matter areas consist of both required subject matters and recommended subject matters. Required subject matters represent the minimum credible knowledge required for the given core knowledge area. These subject matters are mandatory for members who wish to provide professional advice or services related to the core knowledge area.

Recommended subject matters represent knowledge that is not mandatory but provides increased depth of knowledge related to the core knowledge area. These subject matters are highly recommended and have been identified to provide members with direction for their continuing competence program.

The subject matters within each core knowledge area represent areas of study equivalent to a three-credit course in a post-secondary educational institution. Subject matter knowledge is normally obtained through educational training in a degree or diploma program; however, knowledge in certain subject matter areas may be obtained via industry courses, work experience self-study and mentorship. To assure the public that practitioners have acquired knowledge via

work experience, self-study or mentorship, such knowledge needs to be validated through a challenge exam process implemented by the AIA.

It is the responsibility of members to review Table 1, conduct self-assessments and identify how their knowledge and expertise aligns with the required subject matters. If members do not meet a required subject matter within a core knowledge area related to their professional practice, they must address the deficiency before practicing unsupervised in relation to that core knowledge area. To address a deficiency, members must choose to do one of the following:

1. Seek Advice and Direction: Members lacking specific knowledge in required subject matters must recognize the limits of their expertise and seek advice and direction from a qualified professional.
2. Complete Challenge Exam(s): To validate that subject matter knowledge has been gained through work experience, self-study or industry courses, a member may choose to either (i) write a professional practice examination supplied by the AIA; or, (ii) to appear before a panel of peers to complete an oral examination supplied by the AIA.
3. Pursue Formal Education and Training: Obtain credit in a formal course from an appropriate educational institution or from an industry course approved by the AIA. Such courses must have an adjudicated examination to document knowledge attained.

Table 1. Core Knowledge Area, Required and Recommended Subject Matters

Core Knowledge Area	Required Subject Matters	Recommended Subject Matters
Water	<ul style="list-style-type: none"> • Hydrology/Water Resources • Water Quality • General Chemistry 	<ul style="list-style-type: none"> • Limnology • Hydrogeology • Non-point and point source pollution management • Basic Climatology
Soils	<ul style="list-style-type: none"> • Soil Science OR Earth Science • Soil Conservation and Management OR Soil Water Management 	<ul style="list-style-type: none"> • Soil Genesis and Classification • Soil Chemistry • Soil Biology • Soil Physics
Vegetation	<ul style="list-style-type: none"> • Plant Science 	<ul style="list-style-type: none"> • Plant Physiology • Botany • Plant Taxonomy
Landscape	<ul style="list-style-type: none"> • Terrain and Landforms Analysis OR GIS • Physical Geography OR Environmental Science 	<ul style="list-style-type: none"> • Geomorphology • Natural Ecoregions • Wetlands and Riparian Areas • Source Water Protection
Land Use	<ul style="list-style-type: none"> • Land Use Effects on Water Quality and Quantity 	<ul style="list-style-type: none"> • Urban planning • Dryland and Irrigated Crop Production • Forested Land Use • Livestock Production

Ecology	<ul style="list-style-type: none"> • Introductory Ecology 	<ul style="list-style-type: none"> • Aquatic Ecology • Terrestrial Ecology • Wetland Ecology • Riparian Ecology • Basic Climatology
Socioeconomics	<ul style="list-style-type: none"> • Natural Resource Economics OR Environmental Economics OR Agricultural Economics 	<ul style="list-style-type: none"> • Environmental Law • Environmental Policy • Environmental Impact Assessment • Rural Sociology • Environmental Sociology
Research & Development	<ul style="list-style-type: none"> • Statistical Analysis • Experimental Design 	<ul style="list-style-type: none"> • Scientific or technical writing • Science communication • Research proposal writing • Hydrologic modelling
<p><i>Knowledge of a subject matter area may be based on an individual course or be part of multiple courses. For example, knowledge in hydrology may be obtained via a hydrology course or through portions of other courses such as soil physics, soil and water conservation, or watershed management courses.</i></p>		

4. WORK EXPERIENCE

Work experience represents a source of knowledge that is gained through professional practice rather than through educational training. Such experience facilitates development of skill sets and attaining of knowledge needed to be competent within one's practice. Development of these skill sets and knowledge takes time working in an environment where feedback is available to develop one's skills and experiential knowledge.

Three levels of work experience are recognized within this practice standard. These include:

- a) Junior Level (0 to < 3 years) – The junior level of experience coincides with entry level personnel who have recently graduated from an appropriate educational program or have recently begun offering professional services in the PA. This work experience is conducted under direct supervision by a qualified practitioner within the PA. Practitioners at the junior level are considered to have insufficient experience to provide unsupervised professional services.
- b) Intermediate level (3 to < 10 years) – The intermediate practitioner no longer requires direct supervision and has developed the necessary skills and obtained the necessary experiential knowledge to take responsibility for their work.
- c) Senior level (≥ 10 years) – Senior level practitioners are those that have at least 10 years of work experience and generally provide supervision to intermediate and junior staff. They are often recognized as knowledge experts by their peers.

Members will strive to ensure that they have sufficient work experience to conduct and accept responsibility for the work they do. The time frames indicated in Table 2 are provided for guidance. Individual career progression and work experience may vary from these time frames.

Table 2. Typical years of work experience and examples of job duties and responsibilities.

Level of Experience	Examples of Typical Job Duties	Key Responsibilities
Junior (typically < 3 years)	<ul style="list-style-type: none"> • Learning the needed parameters for effective watershed assessment. • Monitoring, gathering data, sampling. • Conducting biophysical inventory and assessment • Learning basic craft of characterizing and rating landscapes • Learning watershed assessment techniques and planning • Learning to understand and communicate with landowners, farmers, ranchers and other clientele • Learning to understand land management practices and drivers • Learning how to interpret data • Developing field skills • Conducting literature search 	<ul style="list-style-type: none"> • Assist with field work, data collection, entry and some reporting. • Supervised and mentored/coached by an intermediate or senior practitioner
Intermediate (typically 3 to 10 years)	<ul style="list-style-type: none"> • Exposure to the Acts and Regulations governing water and resource management in the Province. • Increased role in analysis, evaluation and interpretation • Writing management plans and reports • Some integrated management planning • Conducting field work unsupervised • Mentoring/training junior personnel • Working with senior personnel to report recommendations and results 	<ul style="list-style-type: none"> • Responsible for organizing field work and ensuring data quality • Management planning and regulatory compliance • Unsupervised field work. • Professional sign-off as required
Senior (typically > 10 years)	<ul style="list-style-type: none"> • Fully familiar and ensuring compliance with the relevant Acts and Regulations governing water and resource management in the Province. • Tools, technology and/or policy development • Final review of reports • Planning and management; generally, less field work (with exceptions) • Training and mentoring junior and intermediate personnel • Field work as required depending on client requirements 	<ul style="list-style-type: none"> • Responsible for professional sign-off as required. • Overall personnel, program and budget management and supervision

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4.1 Skill Set Requirements

Certain skill sets and capabilities enhance proficiency within a given PA. Application of scientific or technical knowledge requires skill sets which are identified within this practice standard. Skill sets are essential to functioning effectively within the PA and are generally developed during work experience, mentoring and/or gained through professional development courses.

Table 3. Skill sets relevant to the practice area

Skill Sets	Description
Public speaking, presentation and extension skills	Water resource management professionals perform a critical role in effectively translating and communicating scientific knowledge to a variety of user communities.
Negotiation, mediation, consensus building and conflict resolution	These skills are necessary for dealing with resolution of land and water resource conflicts and challenges.
Relationship building with clients, stakeholders and regulators	This skill set relates to establishing and maintaining relationships and communications with clients, stakeholders and regulators. Communication is essential to ensure that water management drivers are accounted for, and incorporated into, management objectives and client, stakeholder and regulator expectations are addressed. It is important to foster and maintain collaborative partnerships with colleagues, clients, stakeholders, government agencies and regulators.
Coaching and mentoring skills	This skill set includes solution-focused coaching methods and guiding others to achieve their goals.
Regulatory understanding and application	It is important to understand the legal framework, including legislation, standards, guidelines, policies, codes of practice, beneficial management practices, and standard operating procedures that establish the regulatory context for water resource planning and management. Supplementary codes of practice and management guides, recovery plans and other associated documents which guide stewardship are also critical.
Planning and management	This skill set is required to ensure all stakeholders' expectations are addressed within the context of sustainable approaches which balance economic returns with long term health and ecosystem function. It includes proposal and budget preparation, revenue and cost tracking, development and implementation of a management and/or project plan, ongoing assessment of alignment with plans and objectives; change and cost management; project integration and completion. This

	requires a professional objective approach to recommendations and procedures.
Geographic information systems and spatial data analysis.	Watersheds are complex landscapes requiring spatial analysis tools to capture and integrate many resource attributes.
Sampling, data collection, data management, validation and storage	This skill set is required to ensure data meets quality standards by using documented sampling, analytical, and data management protocols to ensure data are credible and defensible.
Documentation and reporting	Documentation of rationale for decisions made and conclusions drawn is a key requirement of professionalism. Clearly expressing results and professional opinions based on supporting data in an appropriate format and appropriate refereed literature is an important skill for the practitioner.
Ethical practice	Members adhere to the Code of Ethics for the profession as they make recommendations to their clients. The Code of Ethics states, “ <i>The Profession of Agrology demands integrity, competence and objectivity in the conduct of its members while fulfilling their professional responsibilities to the public, the employer or client, the profession and other members.</i> ” (See Appendix B)

5. PERFORMANCE REQUIREMENTS

This practice standard not only identifies educational, work experience and skill set requirements for competent practice but also defines the performance expected of regulated members participating in the PA, in addition to the General Practice Standard that applies to all AIA members (see Appendix 1).

The following performance requirements outline the expectations of the professional practicing within the *Water Resource Planning and Management PA*. Failure to comply with these expectations may be considered as constituting unprofessional conduct under the *Agrology Profession Act*.

Regulated members stay current with water resource planning and management research, legislation, directives, guidelines, industry standards and other reference documentation.

Regulated members:

- regularly review the currency of documentation and reference material used to support their practice and obtain most current versions when available.
- attend and provide presentations at workshops and updates related to water resource planning and management including provincial, national and international conferences.
- communicate with regulators, research scientists, educators and other practitioners to ensure they remain current with current water resource knowledge and trends as well as know and understand the legislative requirements they work within.

Regulated members understand the limits of their knowledge, skills and experience and seek the expertise of other professionals where necessary.

Regulated members:

- make appropriate scientific, technical, practical and logistical decisions based on their education and experiential knowledge in water resource planning and management.
- apply their skills and use sound judgement in an ethical manner.
- seek advice and input from other professionals when their expertise is insufficient to make competent decisions and recommendations.
- do not conduct work that is beyond their expertise and work experience level unless they conduct the work under the direct supervision of a qualified regulated professional.

Regulated members clearly understand their role within the practice area

Regulated members:

- clearly understand their role in the practice area, represent themselves as such and do not exceed the boundaries of that role.
- only sign and seal those plans, reports, and other documents for which the members are professionally responsible and which were prepared by or under the direction of the member.

Regulated members clearly understand a project's scope and terms of reference and ensure alignment with the execution of a project management plan.

Regulated members:

- document and understand the objectives, scope and deliverables, and work within the terms of reference, legislative framework or client contract.
- use a consistent and thorough process for management and evaluation.
- regularly review the management plan to determine changes needed in a dynamic system for ensuring alignment with goals, objectives, regulatory requirements and changing environmental and economic conditions.
- regularly engage with clients, stakeholders and employer regarding the scope and water management objectives and adapt and document any changes as required.

Regulated members make decisions and recommendations based on refereed science and established professional and common-sense practice.

Regulated members:

- understand that one management approach is not applicable to all situations.
- strive to balance land productivity with ecology and maintain practice and/or recommendations within a reasonable deviation from established norms.
- use established tools and processes to successfully provide recommendations.

Regulated members review the requirements of this practice standard and address any practice deficiencies through their ongoing continuing competence program.

Regulated members:

- conduct self-assessments based on the education, work experience, skill set and performance requirements indicated within this practice standard.
- review their self-assessment with a senior qualified professional.
- identify any deficiencies and develop a plan to address them.
- regularly participate in the AIA continuing competence program as required by the *Agrology Profession Act*.

6. RECOMMENDED READING MATERIAL

The following is a list of some recommended reading material relevant to the *Water Resources Planning and Management PA* in Alberta. It is not intended to be an exhaustive list.

<p>AGRASID: Agricultural Regions of Alberta Soil Information Database https://www1.agric.gov.ab.ca/\$Department/deptdocs.nsf/all/sag14652</p>
<p>Alberta Agriculture and Forestry. 2004. Standards for the Classification of Land for Irrigation in the Province of Alberta. https://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/irr4436</p>
<p>Alberta Agriculture and Forestry. 2016. Alberta Irrigation Management Manual.</p>
<p>Alberta Agriculture and Forestry. 2017. Alberta Irrigation Information Booklet. Available online at: https://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/irr7401</p>
<p>Alberta Environment and Parks. Guide to Watershed Management Planning in Alberta. http://www.nswa.ab.ca/sites/default/files/documents/Guide%20to%20Watershed%20Plannin%20in%20AB%5B1%5D%20(1).pdf</p>
<p>Alberta Sustainable Resource Development 2012. Stepping back from the water: A beneficial management practices guide to new development near water bodies in Alberta's settled regions. https://open.alberta.ca/dataset/1c70eb43-a211-4e9c-82c3-9ffd07f64932/resource/6e524f7c-0c19-4253-a0f6-62a0e2166b04/download/2012-steppingbackfromwater-guide-2012.pdf</p>
<p>AMEC Earth and Environmental. 2007. Current and Future Water Use in Alberta. Available online at: http://www.assembly.ab.ca/lao/library/egovdocs/2007/alen/164708.pdf</p>
<p>Angelier, E. 2003. Ecology of Streams and Rivers, Science Publishers Inc.</p>
<p>Baird, A. J. and Wilby, R. L. (eds). 1999. Eco-Hydrology: Plants and water in terrestrial and aquatic environments. Rutledge</p>
<p>Branson, F.A., G.F. Gifford, K.G. Renard, and R.F. Hadley. 1981. Rangeland Hydrology. Kendall/Hunt, Toronto.</p>
<p>Brooks, K. N., Ffoliott, P. F. Gregersen, Hans M., DeBano Leonard F. 2003. Hydrology and the Management of Watersheds. Blackwell Publishing</p>
<p>Burrill L.C, S.A Dewey, D.W. Cudney, B.E. Nelson and T.D. Whitson 2005. Weeds of the West. Washington State University Extension Publication.</p>
<p>Chapin, S. F. III. 1980. The mineral nutrition of wild plants, Annual Review of Ecology and Systematics, 11:233-260</p>
<p>Heathcote, I. W. 2009. Integrated Watershed Management: Principles and Practices. John Wiley & Sons, Inc.</p>

Horberger, G. M., Raffensperger, J. P. Wiberg, P. L., Eshleman, K. N. 1998. Elements of Physical Hydrology, John Hopkins University Press
Kirkham, M. B. 2005. Principles of Soil and Plant Water Relations. Elsevier Academic Press
Krebs, C. J. Ecology: 2001. The Experimental Analysis of Distribution and Abundance, Benjamin Cummings
Lahring, H. 2003. Water and Wetland Plants of the Prairie Provinces: A field guide for Alberta, Saskatchewan, Manitoba, and the northern United States, Canada Plains Research Centre, University of Regina.
MacMillan, R. A. and W. W. Pettapiece. 2000. Alberta Landforms: Quantitative morphometric descriptions and classification of typical Alberta landforms. Technical Bulletin No.2000-2E. Research Branch, Agriculture and Agri-Food Canada, Semiarid Prairie Agricultural Research Centre, Swift Current, SK. 118 pp. https://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/sag10470
Marschner, H. 1995. The Mineral Nutrition of Higher Plants. Academic Press, London
Mitsch, W. J. and Gosselink, J. G. 2015. Wetlands 5 th edition. John Wiley & Sons, Inc.
Moss E.H. and Packer J. 1983. Flora of Alberta. University of Toronto Press.
National Research Council. 2003. Riparian Areas: Functions and Strategies for Management. National Academy Press, Washington, D. C.
Participatory natural resource management research http://lib.icimod.org/record/11158/files/4220.pdf
Paterson Earth & Water Consulting Ltd. 2015. Economic Value of Irrigation in Alberta. Available online at: https://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/irr15523/\$file/economic-value-irrigation-alberta-Oct2015.pdf?OpenElement
Prasad, M. N. V. (ed). 1997. Plant Ecophysiology, John Wiley and Sons, Inc.
Royer F. and Dickinson R. 2007. Plants of Alberta: Trees, shrubs, wildflowers, ferns, aquatic plants and grasses. Lone Pine.
Soil Classification Working Group. 1998. The Canadian System of Soil Classification, 3 rd ed. Agriculture and Agri-Food Canada Publication 1646, 187 pp. ISBN 0-660-17404-9
Stetson, L.E. and Mecham, B.Q. (editors) 2011. Irrigation. Sixth edition. Irrigation Associations. Falls Church, VA.
US EPA. 2008. Handbook to Guide Watershed Management Plans to Restore and Protect our Waters. https://www.epa.gov/sites/production/files/2015-10/documents/2008_04_18_nps_watershed_handbook_ch02.pdf

Websites (Management Guides, Organizations):

Agriculture and Forestry http://www.agric.gov.ab.ca/app21/rtw/index.jsp
Agriculture and Forestry Agro-Climatic Information Service: http://agriculture.alberta.ca/acis/
Alberta Agriculture and Forestry Website: Alberta Soil Information Centre and Soil Viewer: http://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/sag6903
Alberta Environment and Parks – Alberta Rivers link: https://rivers.alberta.ca/
Alberta Environment and Parks/ Water – Education/Guidelines/Standards/Fact Sheets http://aep.alberta.ca/water/education-guidelines/default.aspx
Alberta Native Plant Council https://anpc.ab.ca/
Alberta's Wetland Policy link: http://aep.alberta.ca/water/programs-and-services/wetlands/alberta-wetland-policy-implementation.aspx
Cows and Fish Program: http://cowsandfish.org/ <ul style="list-style-type: none">• Recovery Strategy Guides for Various Natural Subregions http://www.foothillsrestorationforum.ca/recovery-strategies/• Riparian and Wetland Classification http://cowsandfish.org/publications/technical.html• Riparian Areas and Management http://cowsandfish.org/publications/management.html
Environmental Quality Guidelines for Alberta Surface Waters https://open.alberta.ca/publications/9781460138731
USDA NRCS Plants Database https://plants.sc.egov.usda.gov/java/
Watershed Planning and Advisory Councils. http://aep.alberta.ca/water/programs-and-services/water-for-life/partnerships/watershed-planning-and-advisory-councils/environmental-stewardship.aspx

Legislation:

Queen's Printer Legislation online: www.qp.alberta.ca/ <ul style="list-style-type: none">• <i>Agricultural Operations Practices Act</i>• <i>Alberta Land Stewardship Act</i>• <i>Drainage Districts Act</i>• <i>Environmental Protection and Enhancement Act</i>

- *Forests Act*
- *Forests and Prairie Protection Act*
- *Irrigation Districts Act*
- *Municipal Government Act*
- *Public Lands Act*
- *Public Lands Administration Regulation*
- *Soil Conservation Act*
- *Water Act*
- *Weeds Act*

7. SUMMARY

This document describes the knowledge requirements, work experience, skill set and performance expectations for professional practice within the *Water Resources Planning and Management* PA for the Agrology profession. It provides direction to members of the Alberta Institute of Agrologists who are practicing or who wish to practice within this PA to ensure they are qualified to conduct work in this area.

Members practicing within this PA are required to review this document and assess their knowledge, work experience, skill sets and performance against the requirements and expectations herein. Where deficiencies are noted it is expected that members will develop a plan to address these deficiencies through their individual continuing competence programs. Members are expected to understand the limits of their own knowledge and expertise and seek additional advice and professional support as required.

This practice standard will be one of the tools the Institute will use in conducting practice reviews or investigating a complaint about a member. It is the responsibility of the member to be aware of the contents of this practice standard.

APPENDIX A

The following General Practice Standard applies to all registered members of the AIA. This General Practice Standard is to be adhered to as well as this detailed practice standard for the *Water Resources Planning and Management PA*.

General Practice Standard for All Registered Members of the Alberta Institute of Agrologists

The General Practice Standard applies to all registered members of the Alberta Institute of Agrologists. The purpose of the document is to describe the duties and responsibilities that are incumbent upon each member of the profession. It is the responsibility of each registered member to conduct themselves in accordance with these standards. Registered members will be measured against these standards by the Institute, the public, employers, clients and colleagues. The Standard describes the values of the Institute and the profession, and the expectation for each registered member.

Professional Responsibility

Each registered member of the Alberta Institute of Agrologists (AIA) is required to uphold the standards and reputation of the agrology profession and professional principles.

Indicators

The registered member has a duty to protect the public and to conduct his or her work with an appropriate standard of care.

Standard of care

Standard of care is the legal duty to exercise the watchfulness, attention, caution and prudence that a reasonable professional in the same circumstances would exercise. If a professional's actions do not meet this standard the professional may be found negligent or to have committed unprofessional conduct.

The registered member is personally responsible and accountable for ensuring that his or her agrology practice and conduct meet the requirements of the practice area(s), practice standards, current legislation, regulations and policy.

The registered member will practice with honesty, integrity and respect, and comply with the AIA's Code of Ethics.

The registered member will sign or co-sign a report only if he or she is willing to accept full responsibility for the contents of the report.

The registered member may delegate portions of the work to competent practitioners under the registered member's direct supervision. The registered member will accept responsibility for that work and provide additional quality assurance/quality control to

determine the sufficiency of that work. Registered members will not sign any document for which they will not take full responsibility for the contents of the document.

The registered member will hold the public interest paramount and endeavour to put service above gain and excellence above quantity.

Competency

The registered member will practice only in an area(s) where the member has demonstrated competence.

Indicators

The registered member will only practice unsupervised in the practice area(s) where the member's education, skills, and experience fulfill the practice area qualifications and the registered member believes he or she is competent. If a registered member's education, skills, and experience do not meet the requirements of the practice area, the member will practice *only* under the direct supervision of a qualified, registered professional who is competent to do the work and who will give appropriate direction to the registered member.

The registered member, if called upon by the profession, a judicial review or a court ordered request, must be able to clearly demonstrate the knowledge and skillsets gained to enable them to practice in any practice area(s) in which the member deems himself or herself competent to practice.

The registered member will undertake continuing professional development (CPD) with the majority of the CPD hours directly relevant to his or her practice area(s). The registered member commits to reporting his or her CPD activities on the member profile as activities are completed.

The registered member will continually update his or her scientific and standard industry practice knowledge related to the member's practice area(s).

The registered member will demonstrate critical thinking when planning, implementing and evaluating all aspects of the work and making any recommendations as a professional.

The registered member is able to show his or her reasoning in reaching decisions through accurate and clearly written documentation.

The registered member will advise the AIA of any changes to his or her practice area(s), particularly when a new practice area is chosen. The registered member will specify the knowledge and skills that have been acquired to support work in the new practice area.

Provision of Service to the Public, a Client or an Employer

The registered member will promote the qualified, competent and ethical professional role and accountability of agrologists to the public, other professionals, and themselves.

Indicators

The registered member will prepare accurate, concise and clearly written reports and correspondence that are appropriate for the intended audience.

The registered member will communicate clearly and respectfully with a variety of people, including his or her employer, colleagues, clients, members of the public and regulators.

The registered member will advise the client if the work is outside of his or her practice area(s) and if the member will be unable to fulfil the terms of reference for the work.

The registered member will make a referral to seek advice, and enter into collaborations with other professionals in situations which require expertise that extend beyond the member's competence.

The registered member will avoid situations where a conflict of interest exists or where the duties and loyalty owed by a member to one party likely will be, is, has been, or perceived to be, in conflict with the duties or loyalties the member owes to another party.

The registered member will extend public knowledge of their area of expertise whether it is in agriculture, the environment, food sciences or life sciences, and promote factual and accurate statements on matters regarding these areas.

Stewardship

The registered member will advocate and practice good stewardship of all agricultural and environmental resources based on sound scientific principles.

Indicators

A registered member will consider monetary issues, social values, rational application of sound science, lesson of valid experiences, economic impacts to the geographic region, and impacts on future generations when conducting his or her work.

A registered member will inform the client or employer of any action planned or undertaken by the client or employer that he or she believes is detrimental to good stewardship or in breach of known legislation, regulations or policies.

Safety

The registered member understands his or her obligation for promoting public and worker safety and considers the health of the environment, health of the consumer, industrial safety, construction safety and the general operational safety of projects.

Indicators

A registered member will demonstrate concern for the immediate and long-term direct effects of agricultural and environmental practices on the safety of workers by being aware of, and evaluating risks.

A registered member will balance the claims of producers and needs and wants of a consuming public against the potentially competing claims for safety of the environment and the interests of individuals and businesses affected by their proximity to agricultural operations. The registered member is aware that the public expects and demands a safe supply of food, not only for current use but also for future generations.

APPENDIX B

CODE OF ETHICS

“The Profession of Agrology demands integrity, competence and objectivity in the conduct of its members while fulfilling their professional responsibilities to the public, the employer or client, the profession and other members.”

Members should be aware of any other laws and responsibilities in regard to other business and voluntary activities which may impact their ethical conduct.

Guidelines to the Ethical Responsibilities of Agrologists

The purpose of the following guideline is to clarify the intent of the Code of Ethics and the understanding of the nature of the professional obligations that arise out of the document. Throughout, it is recognized that membership is a right granted by the public to the regulated member (member) to practice Agrology in such a way that the public interest is served. It is also understood that, just as the individual member has an obligation to conduct business in an ethical and competent manner, colleagues and the Institute share the moral responsibility of protecting their Agrologists and the field of agrology against any unfounded and unjust criticisms.

1) Among the regulated member’s professional obligations to the public are the responsibilities:

a) To practice only in those practice areas where the member’s training, ability, and experience make him/her professionally qualified.

The public has given a right to the Professional with the trust and expectation that those activities are undertaken with competence. A member will not make misleading statements regarding his/her qualifications. A member will actively pursue professional knowledge upgrading specific to their practice area(s) in order to remain competent in his/her field of expertise. A member will make referrals to seek advice, and enter into collaborations with other professionals in situations which require expertise that extend beyond the individual member’s competence.

b) To express a professional opinion only when it is founded on adequate knowledge and experience, and where the member has an understanding of the situation and context in which this opinion is being offered.

Members must clearly distinguish among facts, assumptions and opinions in their preparation of reports and professional statements. Professional opinions should be clearly stated and should include clear indications of the constraints that apply to the opinion, and the relevant qualifying circumstances, facts and assumptions.

Members should exercise care that work they conduct cannot in any way be seen to support or make possible any morally suspect or illegal purposes. In the extreme, this caution might cause a member to refrain from association with enterprises or individuals whose objectives and probity are subject to questions.

Members who act as expert witnesses and provide opinion evidence for the purpose of litigation should not take a partisan position. Agrologists must provide evidence as impartial experts and must not do so as advocates of their client or employer. While acting as an expert witness, a member’s role is to assist the judge/jury/panel with technical matters which are beyond the expertise of the tribunal.

c) To advocate and practice good stewardship of all agricultural and environmental resources based on sound scientific principles(s).

Stewardship requires making complex choices based on a variety of relevant but not necessarily compatible factors. Good stewards must consider, but not necessarily be limited to: monetary matters, social values, the rational application of sound science, the lessons of valid experience, impacts on the economic health of the community at large, and the impacts on future generations. Because of the position of public trust, a member's duty is to uphold professional principles above and beyond the demands of employment.

Conflict may arise between a member's duty to uphold professional principles and the duty to serve the needs of an employer or a client. Members must distinguish between the role they play as Agrologists and the role management plays. Managers have prerogatives and privilege for making decisions based on a wider range of constraints than those that might be appropriate for an Agrologist. The member must not confuse the role of providing others with information upon which to base a decision with the role of being responsible for making the decision him or herself.

If a member believes there is a serious conflict between the requirements of employment and a member's professional principles, a member should inform/or consult the Registrar or any other appropriate persons about the conflict. Members may seek advice and support for the position from the Institute.

d) To extend public knowledge of agriculture and the environment and to promote truthful and accurate statements on sustainable agricultural systems and environmental matters.

Members should strive to develop appropriate involvement with schools, agencies and organizations insofar as such outreach activities can help ensure the dissemination and discovery of sound and appropriate agricultural environment knowledge. Members should attempt to correct misleading or erroneous statements on agricultural matters whenever and wherever such statements are encountered.

e) To have proper regard for the safety of others in all work.

Members must understand their obligation for promoting safety. Members should consider the impact the exercise of their professional duties will have upon the health of the environment, industrial safety, and health of the consumer, construction safety and the general operational safety of completed projects. Members must demonstrate concern for the immediate and long-term direct effects of agricultural and environmental practices on the safety of workers by being aware of and evaluating risks.

The public expects and demands a safe supply of food, not only for current but also for future generations. Members must balance the claims of producers and consuming public against the potentially competing claims for safety of the environment and the interests of individuals and businesses affected by their proximity to agricultural operations.

2) A member's responsibility to the client or Employer is:

a) To act conscientiously and diligently in providing professional services.

Members should endeavour to put service above gain and excellence above quantity. If a member becomes aware of errors or omissions in his/her work, he/she must report the same to his/her client or employer, and immediately work to remedy such errors or omissions.

Expect as required by law, to maintain the confidentiality of client and employer information unless given the explicit consent of the client or employer.

b) A member should consider all information received from a client or employer as confidential unless such information is in the public domain.

Information obtained during and specific to a professional contract situation is confidential and must not be disclosed to others or used by the members outside that contracted situation without the consent of the client or employer. However, technical expertise gained by a member through work may be used in subsequent projects without consent from other parties.

c) To obtain a clear understanding of the client's or employer's objectives.

Members must clearly understand the objectives of the client or employer. Members must make inquiries regarding such objectives to ensure that professional services are provided in the context of complete and accurate information. It is recommended that all oral communication that is material to the delivery of professional services be confirmed in writing.

d) To inform the client or employer of any action planned or undertaken by the client or employer that a member believes is detrimental to good stewardship or in breach of known laws or regulations.

It is a member's duty to advise a client or employer of the consequence of questionable actions and inform the client or employer of the facts that lead the member's belief that the action is detrimental to good stewardship.

e) To refuse any assignment that creates a conflict of interest.

A conflict of interest exists where the duties and loyalty owed by a member to one party are, are likely to become, or to a reasonable, informed and objective observer would appear to be in conflict with the duties or loyalties the member owes to another party.

A member should not accept an assignment in which he/she has a personal or business interest unless that interest is disclosed and approved by the client or employer.

Where a member is in a position of providing professional services to more than one party with different interests in the same or related matter, the member must explain the significance of acting for more than one party to each of the affected clients or employer(s) (the parties) and obtain the written consent of the parties to continue working for more than one party. If any of the parties fail to give their consent the member must then determine whether it is possible to act on behalf of a subset of the parties without conflict. If conflict cannot be eliminated by acting only on behalf some of the parties, then the member should advise all the parties that he/she cannot continue to act for any of them in the matter that generates the conflict of interest.

Members must also advise the parties that no information received in connection with the common matter from the one can be treated as confidential so far as any of the other parties are concerned.

f) To not accept compensation from more than one employer or client for the same work, without the consent of all.

Members need to distinguish between the data or product, which becomes the property of the client; and the process or technical experience, which remains the property of the member.

3) The Agrologist's Responsibility to the Profession is:

a) To inspire confidence in Agrology by maintaining high standards in conduct and work.

A member must keep in mind that the work of an Agrologist is continuously open for public scrutiny and it is the responsibility of each individual to build and maintain a positive image of the field and the profession. Not only must a member perform his/her duties of employment to a high level of excellence, but the conduct of that member must also be of high standard.

b) To support activities for the advancement of the profession.

Members have an obligation to participate in the activities of the Institute (i.e., meetings, elections, holding office, mentoring) as the individual members situation and opportunities allow.

Members need to be constantly aware they are Agrologists and should, by their conduct, provide a positive image of the profession. Each member must be prepared to personally promote Agrology in personal contacts and communications, and to participate in specific promotional initiatives organized by the professional organizations.

c) Where a member believes another individual may be guilty of infamous or unprofessional conduct, negligence or breach of the Agrology Profession Act or bylaws:

to raise the matter with that individual and

if not resolved or if otherwise deemed necessary to inform the Registrar of the Institute in writing.

A member should ensure that the facts and understanding of the misconduct are correct. Consultation with a colleague or Registrar is encouraged if it may help clarify the issue. Members should make every effort to raise and resolve the issue in a candid and professional manner. Agrologists should note that only in exceptional circumstances is it inappropriate to raise such a matter with the other member if done courteously and politely.

d) To state clearly on whose behalf professional statements or opinions are made.

A professional opinion or statement prepared by an Agrologist is for a specific situation and set of circumstances. The content of a professional opinion should include the context in which it is made.

e) To sign and seal only those plans, reports, and other documents for which the members are professionally responsible and which were prepared by or under the direction of the member.

Members who affix their seal and/or signature assume responsibility for and understand the document. The responsible professional must have exercised sufficient control and association with the document so he/she can sign and seal the document based on personal knowledge. Members will not associate themselves with documents, reports or statements that misrepresent, distort or omit material facts. Members should familiarize themselves with information that details the procedures and protocols that are associated with the use and practice of sealing professional works.

4) A member's professional responsibility to other members is:

a) To abstain from undignified or misrepresentative public communication with or about members.

Conduct between members should be characterized by respect, courtesy, honesty, and good faith. Direct and honest criticism between professionals is acceptable and professional debate is encouraged when characterized by fairness and propriety.

Members should be courteous when criticizing the work of another member and be as careful with a colleague's reputation as they would be with their own. Members will advise another regulated member in advance if they are reviewing/critiquing the other's work for a specific project. An individual member will not make statements or representations on behalf of the Institute without prior authorization.

b) To give credit for professional work to whom credit is due.

Members should always acknowledge the work and contributions of others when directly using that work in whole or in part. Members should clearly understand and appreciate that the unpaid use of marketable processes and technology developed by another member could jeopardise that other member's livelihood.

Members will follow the rules and law of copyright. Members will secure releases for any data, process (es), and publication(s) obtained from written or electronic sources.

c) To share knowledge and experience with other members.

Each member has a duty to new members and to the future of the Institute to be available as a mentor for new members. Individual members should offer and seek out constructive professional discussion and debates with colleagues to maintain a vibrant and progressive profession.

Code of Ethics, Revised September, 2010