



# Water Security Agency

Water & Wastewater Operator  
Certification Program Guide

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**EPB 144**

Note: As of October 1, 2012, The Water Security Agency and Saskatchewan Ministry of Environment share responsibility and authority for the administration of *The Environmental Management and Protection Act, 2010*, and *The Waterworks and Sewage Works Regulations* as pertaining to prescribed waterworks or sewage works in Saskatchewan. Therefore, all material contained within this document applies to waterworks or sewage works governed by the Water Security Agency or the Saskatchewan Ministry of Environment in accordance with their assigned responsibility.

## Foreword

This program guide supports the Saskatchewan Water and Wastewater Works Operator Certification Standards, December 2016. The new standards came into force on December 4, 2016 replacing the previous standards. The Standards, Program Guide, Recommended Reading for Operators and other informational material is available by contacting Water Security Agency (WSA) on the Internet at: <http://www.saskh2o.ca/foroperators.asp> or by telephone (306) 787-0726.

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Exam sittings can be set up at the request of an operator at any Saskatchewan Polytechnic campus or regional college location. For more information on the certification exam process, please contact Tracey Johnson at 1-306-691-8318 or 1-866-467-4278.

**[www.saskH2O.ca](http://www.saskH2O.ca)**



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## 1. Introduction

The Water Security Agency (WSA) has the authority to set and amend the certification standards. This includes the definition of an operator, education/experience requirements, allowed substitutions, regulatory enforcement activities and all aspects of interpretation of the regulations and standards. The regulations established a self-funded Operator Certification Board (referred to as OCB or Board), which is empowered to administer the Operator Certification Program. The role of the Board is to administer and track certification. Policy issues concerning how the regulations or standards are applied [this includes issues such as interpretation of CEUs, substitutions for education or assignment of Direct Responsible Charge (DRC)] should be directed to WSA.

### 1.1 Key Components of Certification

The Certification Program has the following key components:

- regulatory framework provided by *The Waterworks and Sewage Works Regulations*, which outlines the duties and responsibilities of the certification program;
- a self-funded Operator Certification Board to oversee the administration of issuance and renewal of certificates, maintenance of certification records and personal records, the negotiation of reciprocity between other jurisdictions and the interpretation and evaluation of CEUs;
- certification standards prescribing how facilities are classified and the qualifications of water and wastewater operators;
- establishment of an appeal process for operators; and
- the ability to allow operators certified in one province to obtain certification in another province that has a similar program.

### 1.2 Benefits of Certification

Certified operators are valuable resources in the management of water and wastewater works. They can maximize the performance of the facilities, minimize the public health risk, protect infrastructure investment and provide greater return on the utilities' capital investment. Certification is viewed as a form of recognition of achievement. It means the public, regulatory agencies, facility owners and peers can be assured that certified operators have the skills, knowledge, abilities, experience and judgment to perform their work competently.

### 1.3 Small Systems

The program is designed to recognize the diverse water and wastewater works in the province. A Small System facility classification and the corresponding Small System operator certification have been adopted to accommodate small water and wastewater works in the province. These systems typically serve fewer than 500 people. Details as to the type of systems that qualify as a Small System, are found in Section 4.1.

The plant classification (whether water or sewage works) remains at a Class I facility, however, the operator may choose to certify at a Small System level. This allows the operator to meet reduced certification requirements such as writing one combined exam for both water treatment and distribution or wastewater treatment and collection. An operator employed at a facility, that meets the requirements of a Small System, still has the right to certify at the facility classification (Class I). The operator does not need to be certified at the Small System level before moving to a Class I certification but can complete the initial certification at Class I.

### 1.4 Operator in Training

The standards provide a staged process whereby an entry-level operator can successfully advance in a stable working environment to a position of responsibility for the works. In order to accommodate entry level operators, an Operator-in-Training (OIT) certification is available for operators currently employed in facilities rated at Class II or lower, but who do not meet all of the certification requirements. Details of the OIT program are provided in Section 4.2.4. This also allows owners to fill vacant positions without the concern of being in non-compliance with the regulations.

## 2. Regulatory Framework

Certification is based on *The Environmental Management and Protection Act, 2010* (EMPA) that was enacted on June 1, 2015. Subsection 98(1) Items (v) to (y) of this Act provides, in part, that the Lieutenant Governor in Council may make regulations:

- prescribing standards and authorizing the Minister to prescribe standards for the operation of waterworks and sewage works where those standards are required for the protection of the environment and the public health;
- respecting training and qualification of operators of the waterworks and sewage works; and
- respecting establishment of a certification Board for the purpose of certifying operators of water and wastewater works.

*The Waterworks and Sewage Works Regulations*, Sections 43 to 71 deal with operator certification and apply to systems providing potable water for “consumptive use” that is drinking, cooking/food preparation and oral hygiene. It does not apply to systems providing “hygienic” use water for bathing, showering, cleaning or washing.

Some of the main features of the framework in the regulations are:

- on and after July 15, 2005, all owners of a municipal waterworks or wastewater works are required to ensure the responsibility for the overall day-to-day operation of the works be placed with an operator(s) holding the appropriate certificate(s). For example, a community with a Class II water treatment facility must have an operator certified (in accordance with the certification standards) in Water Treatment Class II or higher working at and in charge of that facility. System owners should be aware that failing to fulfill this legal responsibility may put the public health and/or environment at risk;
- the same requirements are also applied to pipelines connected to municipal works, to all other pipelines not otherwise connected to municipal works that serve 15 or more service connections and to non-municipal (e.g., private and government) water and wastewater works that have a design capacity of potable water or wastewater exceeding 18 cubic metres per 24-hour period. These systems fall under the jurisdiction of the regulations;
- the day-to-day operation of a facility means activities that affect the performance and reliability of the facility. The operational activities for a water treatment plant, for example, include, but are not limited to activities such as water quality monitoring/testing, record keeping, inspecting, reporting, adjusting controls and repairing. (Appendices B-1, B-2, B-3 and B-4 list the typical day-to-day activities of an operator);
- each system owner should have a contingency plan to place the day-to-day operation of the facility with another operator who holds an appropriate certificate for events such as when the regular operator is sick, on holidays, on leave or leaves for another job. The contingency plan may include the use of an OIT if the facility is a Class II or lower or a staffing protocol regarding sharing operators with nearby communities;
- the regulations adopted certification standards respecting the classification of water and wastewater works facilities and the qualifications for the certification of the operators of those facilities. These standards are referred to as the Saskatchewan Water and Wastewater Works Operator Certification Standards, December 2016 available at [saskobc.ca](http://saskobc.ca) and [saskh20.ca](http://saskh20.ca) or by telephone (306) 787-0726;
- the regulations provide an applicant the opportunity to make written representations to the OCB before the OCB takes any actions regarding the Board’s refusal to issue a certificate, the cancellation or the suspension of a certificate; and
- an operator may appeal, in writing, any decision by the OCB pertaining to the issuance, cancellation or suspension of a certificate, on matters of jurisdiction or law to a judge of the Court of Queen’s Bench.

### 3. Operator Certification Board's Roles and Responsibilities

The regulations established a self-funded Board consisting of at least three members with a maximum of seven. The Minister appoints the members. The Board does not have authority to establish the certification standards, address training issues or set examination requirements, times or locations.

*The Waterworks and Sewage Works Regulations* empower the Board to administer the Operator Certification Program. Section 57 of the regulations require the Board to have an annual audit of its records and Section 58 requires the Board to submit on or before June 30 an annual report of its previous year's operating activities to WSA.

According to Section 52 of the regulations (or as otherwise indicated) the Board may:

- accept any funds;
- enter into contracts or agreements that it considers expedient or desirable in the exercise of its power or the performance of its responsibilities;
- charge fees within the range set out in Section 66 for the certification of operators, for renewal of certificates and for matters respecting certification and certificates and collect and expend those fees;
- employ staff as necessary in order to carry out the intent of the regulations;
- per Section 69, determine the period for which a certificate remains in effect as long as the period is not less than one year nor greater than two years;
- attach any terms to a certificate that the Board considers appropriate;
- issue or renew or refuse to issue or renew a certificate;
- cancel or amend a certificate that was issued due to clerical or other similar error;
- per Section 71, amend or suspend certificates, where the Board is satisfied that:
  - o the certificate was obtained by fraud, deceit or the submission of an application containing inaccurate information;
  - o the person holding a certificate has been discharged from employment in a facility for gross negligence or for incompetence in the performance of his or her duties; or
  - o the person holding the certificate has placed the environment or human health or public safety at risk. For example, the certified operator intentionally ignores the terms and condition as set forth by the Permit for Waterworks and/or the Permit for Sewage Works issued by WSA; or the operator fails to take appropriate actions (such as failure to notify WSA and the public when the disinfection equipment is not functioning properly or fails to follow up on positive test results) to mitigate the bacteriological quality concerns;
- appoint any advisory committee that is considered necessary for the efficient conduct of the affairs and business of the Board, including appointing persons to any advisory committee who are not members of the Board;
- enter into reciprocity agreements with other jurisdictions respecting operator certification standards;
- make bylaws governing its business and operation that it considers appropriate;
- generally do and authorize the doing of any things that it considers incidental or conducive to the exercise of its powers or the performance of its responsibilities;
- per Section 53, borrow any amount of money that it considers will be required to fund the operation of the Board or to fulfill the purpose of the Board; and
- per Section 55, invest part of the capital money of the Board in any security or class of securities authorized for investment of money in the general revenue fund pursuant to *The Financial Administration Act, 1993*. The Board may dispose of the investment in any manner, or any term and in any amount that the Board considers appropriate.

## 4. Certification of Operators

To obtain certification, water and wastewater works operators must meet the certification criteria as stated in the Saskatchewan Water and Wastewater Works Operator Certification Standards, December 2016. This document outlines the facility classifications and the certification criteria including formal education, work experience and examination requirements. The standards allow for the substitution of education for experience and vice versa. Information provided to the Board for review must be as complete and sufficiently detailed as possible so that the Board can determine whether the operator meets the requirements as set out in the standards. Certificates from the previous voluntary program are no longer valid and cannot be used to obtain certification in the new mandatory program.

### 4.1 Facility Classifications

The classification of the facility is used to determine the corresponding operator certification class (i.e. a Class II water treatment plant requires at least one designated operator who has been certified at Water Treatment Class II). Each facility is classified using the existing Point Rating Classification System as well as the Small System Classification criteria developed by WSA. The Point Rating Classification System has been developed by the Association of Boards of Certification (ABC), Ames, Iowa, and is used by many other jurisdictions across Canada and United States. WSA's Facility Classification System (based on the ABC, Ames, Iowa's point rating system) is shown in Table 1 and Table 2.

Water and wastewater facilities classified before the coming to force of *The Waterworks and Sewage Works Regulations* retain their current classification until WSA has reclassified them. The facilities are reclassified when changes in size or treatment component(s) are being made. Facility owners should notify WSA if their facilities have not been classified or if any changes have been completed in the operation/processes of their facilities.

**Table 1: Facility Classification System for "Small System" Facilities**

Type of Works	Classification Units	Population Served	Facility Type
WW	Population Served & Treatment	500	Any combination of distribution and treatment works. The treatment works must have a classification of Class I or less and must not be surface water treatment.*
WWW	Population Served & Treatment	500	Any combination of collection and treatment works. The treatment works must have a classification of Class I or less.**

\* For example, iron and manganese removal facilities, softening using ion exchange, chlorination and filtration facilities and chemically assisted filtration such as in line or direct filtration systems.

\*\* Including non-mechanical treatment plants such as lagoons.





Related work experience is not limited to the current employer. If an operator worked at a facility with a higher classification than the one currently employed at and meets the criteria for certification at the higher classification, the operator can become certified at the higher level. This means that although the operator may currently be employed at a Class I plant but had several years experience at a Class II plant, the operator can apply for the Class II certification. It is important to note that the certificates are site unrestricted and based on the operator's abilities, training and experience.

Operators are responsible for maintaining and storing their own records regarding education, testing, training, CEU and so on. Operators are able to request a copy of their old records from the government database by contacting WSA at (306) 787-0726. Please note that no new information on education, training and CEU is being added to these records.

The OCB issues either a Small System, Class I, Class II, Class III or Class IV certificate to qualified waterworks and/or wastewater operators in accordance with the certification criteria as outlined in the Standards. These criteria are outlined in the following sections.

#### **4.2.1 Formal Education**

With the exception of the Small System certificate, applicants seeking certification in Saskatchewan should have completed Grade 12, GED 12 or have enough experience or training to substitute for the missing education requirements. For those seeking Small System certification, they should have completed Grade 10 or equivalent. There is no substitution allowed for education for Small System and Level I classifications.

Proof of education must be submitted when applying for certification. Although a copy of an official transcript or diploma is the most common form of proof, other documentation, as approved by the Board, such as a declaration under oath, may be accepted if official documents do not exist. A declaration may be acceptable for those operators who graduated before 1970; however, this would not be considered acceptable for proof of post secondary completion.

In addition to the above minimum requirements for formal education, applicants should have the following additional formal education:

- if seeking certification in Small System, Class I and Class II, post secondary education is not required;
- if seeking certification in Class III, a total of two years of post secondary in environmental control, engineering and/or science is required; and
- if seeking certification in Class IV, a total of four years of post secondary in environmental control, engineering and/or science is required.

Applicants seeking certification in Class III or Class IV may be permitted to substitute for any missing education requirements as follows:

- 45 CEUs of training in water and/or wastewater works for one year of post secondary without limitation; and
- these same experience and/or CEUs cannot be used to fulfill the experience requirements.

An education policy has been developed to assist operators in evaluating their educational standing. The policy, found in Appendix A, outlines the acceptability of post secondary courses and evaluates the time required for obtaining each year of training. It is important for operators to maintain a copy of their own training records including CEUs, for submission to the Board when applying for certification.

#### **4.2.2 Experience**

For the purpose of certification, the experience may include the experience obtained by performing those duties as stated in Appendix B-1, B-2, B-3 and/or B-4 of this publication.

When applying for certification, the operator must provide a clear and complete list of duties for the area(s) being considered for certification. The duties listed in the appendix can be used as a guide. For purposes of certification experience, an operator need not be working in a water or wastewater facility for a full eight hours per day to be deemed as having obtained one day of experience. The operator, if assigned the operation or control of the facility, can conduct other routine work and still be considered as having obtained one day of experience.

In the case where a relief operator (not normally employed by the community) is used to replace the normal operator, the time spent on the job will be counted in the same manner as would be for the person they replace. This would be the case for holiday replacement or for weekend replacement. Therefore, for each day of employment, where the duties include facility operation, one day of experience will be granted.

In the case where a full time employee is not normally assigned the duty of operator but is used in a relief capacity, the time spent assigned as an operator will count in the same manner as that of the full time operator. Therefore, for each day or shift of employment, where the duties include operation of a facility, one day of experience will be granted. The definition of shift would normally be for an eight hour day but does not preclude shorter or longer shifts nor do these differences affect the intent that one day of experience will be gained. Therefore, in a plant staffed 24 hours per day, each shift staff can claim experience for that day assuming an eight-hour shift.

For the purpose of determining a year of experience, the following definitions will be used:

46 weeks = 1 year

230 days = 1 year

1840 hours = 1 year.

Operators seeking certification in Class III and Class IV should have DRC experience. DRC experience is the experience gained after an operator obtains Class II certification, through accountability for the performance of, or supervision of daily, on-site operational duties for a facility or operating shift in a Class II or higher facility. This can only occur when the facility owner designates a position held by an operator to be in DRC. The facility owner can designate a number of DRCs for that facility. Staff from engineering consulting firms and other agencies such as SaskWater may be able to gain DRC experience, if they are accountable for the daily performance and the reliability of the facility.

The complete experience requirements are provided in the Saskatchewan Water and Wastewater Works Operator Certification Standards, December 2016. Operators should review these requirements prior to applying to the Board to determine if they have completed the experience requirement. Operators should contact the Board if clarification of related experience is required.

### **4.2.3 Certification Exams**

WSA has standardized exams as developed by ABC and provided by WSA for all exam session. Exam sessions are administered on a cost recovery basis. WSA has arranged to have Sask Polytechnic establish exam locations, times, and to monitor the sessions. Exam sittings can be set up at the request of an operator at any Sask Polytechnic campus or regional college location. For more information on the certification exam process, please contact Tracey Johnson at 1-306-691-8318 or 1-866-467-4278. To be certifiable, the applicants must obtain at least 70% on the certification examination.

#### **4.2.3.1 Eligibility**

Operators must write certification exams level by level from Class I to Class IV. An operator may write an exam at a higher level. However, if the operator applies for a Class I certificate they must have passed the Class I exam. A higher-level exam result is not acceptable but can be used once they apply for that level.

An applicant can write examinations higher than the class of certificate they hold. For example, a person with a Class I certificate may write a Class II exam. However, a Class II certificate may not be issued until the applicant meets the experience and education requirements, even though the applicant has passed the exam. Applicants can also write an examination in a category other than the current category in which they have been certified, beginning at the lowest level and proceeding level by level. An operator must have satisfactory documented experience in that other category before certification may be granted.

Applicants need to register and prepay to write and/or rewrite certification examinations. It is recommended that applicants have at least half the experience required for the certification class and category of which the examination is being written. An operator may register and prepay to rewrite a certification examination at the next scheduled examination session.

### 4.2.3.2 Exam Format

A standardized certification examination is used to determine skill, knowledge, ability and judgment of the applicants. The certification exams for each certification class and category are standard exams provided by ABC. ABC corrects the examinations and reports the results back to Sask Polytechnic, which in turn advises the operators. Table 3 below indicates the number of exams required to fulfill the certification criteria.

**Table 3: Number of Exams Required**

Class Category	Small System	Class I	Class II	Class III	Class IV
Water Treatment	1	1	1	1	1
Water Distribution	1*	1	1	1	1
Wastewater Treatment	1	1	1	1	1
Wastewater Collection	1*	1	1	1	1

\* The waterworks exam will cover both water treatment and distribution. The wastewater works exam will cover both wastewater treatment and wastewater collection.

### 4.2.3.3 Study Material

Operators should review water and/or wastewater works manuals prepared by various water and wastewater organizations to prepare for examination. The exams are set up to test an operator's general skill and ability and no one course or manual is designed to meet all the study aids needed. An operator needs to rely on their education and operating experience/knowledge to challenge the exams.

### 4.2.4 Operator in Training (OIT)

OIT certificates may be available for operators currently employed in facilities at Class II or less. OIT certificates are site-restricted, non-renewable and may be issued up to a term of three years. OIT certificates may be issued when:

- communities with Class II or lower facilities have only one newly hired operator to operate the facilities; and
- the operator has adequate qualifications to meet the formal education requirements for Class II or fewer certificates, but does not have adequate work experience.

To be eligible for OIT certificates, operators should be employed in a Small System, Class I, or Class II facility; have the ability to meet the formal education for the certification level being requested and have the following experience:

- no experience required for an OIT Certificate in Small System classification; and
- have the ability to achieve the required operating experience as stated in Section 4.2.2, within the allotted time frame, for Class I and Class II OIT Certificates in Class I and Class II respectively.

While holding OIT certificates, applicants may write certification exams as required. For example, an operator holding a Class I OIT can write the Class I certification exam. Please see Section 4.2.3 for detailed information on examination requirements. Even though an operator has successfully completed the Class I certification exam, the OIT certificate may not necessarily be upgraded to a regular Class I certificate. This may only happen when the operator fulfills the formal education and experience requirements, in addition to the completion of the required certification exam(s).

## 4.2.5 Summary of Operator Certification Criteria

**Table 4: Summary of Operator Certification Criteria**

Certification Class	Education	Facility Experience	Other
Small System	Grade 10	6 months in a Small System or higher facility	Complete a Small System certification exam with a 70% mark.
Level I	Grade 12	1 year in a Class I or higher facility	Complete a Level I certification exam with a 70% mark.
Level II	Grade 12	3 years in a Class I or higher facility	Complete a Level II certification exam with a 70% mark.
Level III	Grade 12 plus 2 years of post-secondary education	4 years in a Class II or higher facility	WT and WWT certificates require 2 years of DRC at Class II or higher facility. Complete a Level III certification exam with a 70% mark.
Level IV	Grade 12 plus 4 years of post-secondary education	4 years in a Class III or Class IV facility	WT and WWT certificates require 2 years of DRC at Class III or Class IV facility. Complete a Level IV certification exam with a 70% mark.

## 4.2.6 Certification Fees

Effective January 1, 2008, the two-year certification fee of \$150 is charged by the Board. This allows the Board to recover its costs for the initial certification review and for other certificate changes or amendments for the two years from the initial certificate being issued. The operator can add new areas of certification or move up in classification without paying an additional fee. However, Section 66(3) of *The Waterworks and Sewage Works Regulations* allows the Board to charge a fee of up to \$125 per year for a two-year certificate to recover any increasing costs in reviewing applications and issuing certificates. Fees paid to the Board are non-refundable. However, if the Board does not issue the operator a certificate, the operator can re-apply within the next two years without additional application fees being required.

## 5. Appeals

An operator may make a written appeal on matters of certification, which are related to any decision made by the Board on the issuance, cancellation and/or the suspension of a certificate. The appeal is to be submitted to the Board within 30 days of the operator being advised of their application decision.

## 6. Reciprocity

The OCB has the authority to negotiate and enter reciprocity agreements with other certification agencies in Canada and abroad. It is program's intent that operators certified by examination in other jurisdictions will be accorded appropriate reciprocity based on the Board's authority.

## 7. Certificate Issuance and Upgrade

Any person who wishes to obtain or upgrade an operator certificate is required to apply to the OCB. The applicant is required to provide evidence satisfactory to the OCB that they have the necessary examination(s), training, education and

experience for certification as set out in the Saskatchewan Water and Wastewater Works Operator Certification Standards, December 2016.

Operators certified at any level lower than Level IV may upgrade their certificates to a higher level. The certificate may be upgraded to only one level higher than the current level. For example, a Class I certificate cannot directly be upgraded to a Class III certificate, but it can be upgraded to a Class II certificate and then to a Class III. The applicant must provide supporting information to satisfy the requirements laid out in the standards for the higher classification. Also, the certificate can only be one level higher than the classification of the facility being worked at.

The Board will, within 90 days after receiving the application:

- issue a certificate to the applicant;
- notify the applicant that no certificate will be issued; or
- notify the applicant that further information is required to complete the application.

## **7.1 Certificate Renewal**

*The Waterworks and Sewage Works Regulations* state in Section 66 that an operator must submit proof of having obtained training credits when renewing an operator certificate on or after July 15, 2005. The applicant must satisfy the OCB that 5.0 contact hours or 0.5 Continuing Education Units (CEU) of training per year in an appropriate field have been obtained during the preceding two-year valid period of the certificate. Remaining credits cannot be carried over to another renewal.

Note: Operators are reminded to retain copies of all Certificates of Attendance and Certificates of Completion for proof of training credits.

To renew an operator certificate, an operator will receive a renewal notice from the OCB in advance of the expiry date. The operator must follow the instructions on the notice and submit the renewal fee and any information requested by the OCB. Address changes must be reported to the OCB as soon as possible.

## **8. Cancellation or Suspension of Certificates**

Prior to the cancellation or suspension of a certificate, the OCB will provide reasonable notice to the operator about their intended action in writing. The operator has the opportunity to make written representations back to the Board, if they feel that the Board has misinterpreted important information.

The OCB can amend, cancel or suspend a certificate if the certificate was obtained by fraud, deceit or the submission of an application containing inaccurate information; the person holding the certificate has been discharged from employment in a facility for gross negligence or for incompetence in the performance of their duties; or the person holding the certificate has placed the environment or health or safety of the public at risk.

## **9. Certified Operator's Role and Responsibilities**

Certified operators should be familiar with *The Waterworks and Sewage Works Regulations* and should know the terms and conditions in the operating licence(s) for the waterworks and/or wastewater works facilities in which they are working. They should also understand the certification requirements for operators of their facilities as indicated by the Regulations, Standards and this document.

Certified operators should understand the contingency plans, for the facility in which they work, to ensure the requirements, with respect to certified operators, are met at all times. This is important during normal operation or in the cases of planned absences (e.g. vacation), unplanned absences (e.g. illness) or change of staff (e.g. retirement).

Operators should keep themselves current with respect to the issues related to waterworks and/or wastewater works. This may be accomplished through continuing education and/or other means.

## Appendix A

### Educational Course Assessment for the Operator Certification Program

#### Equivalent Time Calculation

For the purpose of calculating time allocation, one year of post high school is equal to 30 credit hours of university courses based on five classes each of three credit hours per semester over two semesters; 900 hours of course content from a technical school; 45 CEUs of training in an appropriate field; or completion of a full year of course content in an appropriate field of study as defined below.

#### Appropriate Field of Studies - Completed Degrees and Diplomas

For the purpose of completed degrees and diplomas, a DACUM will be used to assess the acceptability of the program. The DACUM establishes the minimum course content requirements to meet the training needs of an operator. The DACUM for water and wastewater operators requires that any degree or diploma include the minimum of:

- courses in mathematics or physics;
- courses in environmental studies, water/wastewater or related fields; courses in a natural science (Biology, Chemistry); and
- courses in administration or management.

In general, the following areas of study are appropriate as post secondary educational fields:

- a Bachelor Degree in Science, Medicine or Engineering resulting in a B.Sc, B.A.Sc or B.Eng. This includes Agriculture, Biology, Laboratory Studies and Chemistry degrees; and
- a diploma in the field of Applied Science and Technology, Laboratory Studies, Medical Studies or Engineering Technology.

If a degree or diploma does not meet the minimum DACUM requirements, the applicant will be advised of the missing component(s) and be required to supplement their education by attending CEU accredited courses or by other educational means.

The Certification Board will review and assess non-traditional educational programs not addressed by this policy as required. The assessment will be based on a common understanding of educational requirements needed for an operator to perform their duties.

#### Appropriate Field of Studies - Partial Degrees and Diplomas

For the purpose of partially completed degrees and diplomas, the following classes will be counted towards the post secondary educational requirements:

- any and all courses included in Table 5;
- no more than seven courses from a University or Technical College included in Table 6; and
- no more than three courses from a University or Technical College included in Table 7.

For partial degree/diploma credit, the applicant must provide sufficient information concerning the courses taken and the contact hours received and passed, for the OCB to review and rule on. The SaskOCB has created a Post Secondary Course Assessment form which is available online at [saskocb.ca](http://saskocb.ca). The applicant should work closely with the educational institution to ensure sufficient supporting documentation is submitted to the Board for review as to the acceptability of the course content as defined under Tables 5, 6 and 7.

The Board's responsibility rests with the assessment of an operator's qualifications and not with compiling the information in a coherent and manageable format. If the submission is unclear or raises new questions, the Board has the right to address these issues with the applicant and hold off on issuing any certificate until satisfied of course integrity.

The Board will review and assess non-traditional courses not addressed in the following tables as required. The assessment will be based on a common understanding of educational requirements needed for an operator to perform their duties.

**Table 5**

Engineering	Any class listed under the Faculty, Department or College of Engineering Calendar from a University or Technical College
Natural Sciences	Biology, Microbiology, Biochemistry, Chemistry as listed by a University or Technical College
General Sciences	Computer Science, Mathematics, Statistics, Physics, Laboratory Procedures, Medical Field as listed by a University or Technical College

**Table 6**

Administration	Courses relating to Accounting, Finance, Production, Operational Management or Public Sector Management as listed by a University or Technical College
Economics	Any economics course as listed by a University or Technical College
Education	Science related (per definition under table 1) courses for high school education requirements as listed by a University or Technical College

**Table 7**

Arts	English, Geography, Geology, Sociology, Psychology, Anthropology, History or Political Science as listed by a University or Technical College  NOTE - language courses or fine art program courses are not acceptable
Education	Business related courses for high school education requirements as listed by a University or Technical College

### **Journeyman, Technician and Apprentice Courses**

Due to the variability of course content, length and applicable subject matter in these types of programs, the Board will require detailed information concerning the program be submitted along with a copy of the transcript. This will include sufficient information to support the claim that the program studied is applicable to the fields of knowledge required by an operator.

Completed certificates may be allowed for credit towards post secondary education if the course length and content are applicable as determined by the Board. The Board will provide an assessment as to the percentage towards educational credit after assessment is complete. Fields, which may be appropriate, include the following areas:

- electrician/electronics or instrumentation;
- pipe fitter/pump mechanic/plumber; and
- pressure vessels/steam engineer certificate.

Typically, a Journeyman’s certificate in areas such as carpentry, masonry or other general construction will not be accepted as equivalent educational knowledge under the Standards.

## **Appendix B-1**

### **Typical Duties for Water Treatment Facility Operators**

An operator is a person who daily performs activities primarily consisting of controlling any process, which affects the quality of the product. Duties may include performance of day-to-day maintenance, laboratory tests, administration, special studies or engineering work so long as the primary function involves process control. For example:

- start up, shut down and make periodical operating checks of plant equipment such as pumping systems, chemical feeders, auxiliary equipment (e.g. compressors), measuring and control systems;
- perform preventive maintenance, such as lubrication, operating adjustments, cleaning and painting equipment;
- load and unload chemicals, such as chlorine cylinders, bulk liquids, powdered chemicals and bagged chemicals using chemical-handling equipment such as fork lifts, hoists and by hand;
- perform corrective maintenance on plant mechanical equipment, for example chemical feed pumps and small units;
- maintain plant records, including operating logs, daily diaries, monthly and annual reports, chemical inventories, equipment inventories/operating records and data logging duties;
- monitor the status of plant operating guidelines, such as flows, pressures, chemical class and water quality indicators by reference to measuring systems and make appropriate process changes;
- collect representative water samples and perform laboratory tests on samples for turbidity, colour, odour, chlorine residual and other tests as required;
- order chemicals, repair parts and tools;
- estimate and justify budget needs for equipment and supplies;
- conduct safety inspections, follow safety rules for plant operation and also develop and conduct tailgate safety meetings;
- discuss water quality with the public, conduct plant tours (especially school children), and participate in department/municipal public relations programs;
- communicate effectively with other operators/supervisors on the appropriate technical level;
- make calculations to determine chemical feed rates, flow quantities, detention and contact times, hydraulic loading, as required for plant operation;
- fulfill all requirements of your facility's Approval to Operate;
- make or direct emergency repairs of adjustments to the facilities without compromising water quality or safe water quantity;
- monitor plant processes, interpret test results and make the necessary adjustments to ensure optimum treatment;
- establish and adjust chemical feed rates; and
- determine need for and perform filter backwash, clarifier blow-down, etc.



## Appendix B-2

### Typical Duties for Water Distribution Facility Operators

An operator is a person who daily performs activities primarily consisting of controlling the distribution network, which affects the quality, quantity and reliability of water service to the consumer. Duties may include performance of day-to-day maintenance, laboratory tests, administration, special studies or engineering work with respect to reservoirs, transmission lines, pumping stations, meters and pressure reducing/regulating stations, so long as the primary function involves control of the distribution network. For example:

- place barricades, signs and traffic cones around work sites to protect operators and the public;
- excavate trenches and install shoring;
- lay, connect, test and disinfect water mains;
- tap into water mains;
- flush and clean water mains;
- locate and repair water main leaks. Locate, operate, maintain and repair valves;
- read and update water distribution system maps and “as built” plans;
- operate and maintain deep wells;
- collect, transport and submit water samples;
- clean and disinfect storage tanks and reservoirs;
- protect water mains and storage facilities from corrosion effects;
- protect water mains and storage facilities from freezing, thaw frozen lines and services;
- observe pump motors and detect unusual noises, vibration or excessive heat;
- adjust and clean pump seals, packing glands and mechanical seals;
- repair and overhaul pumps, motors, chlorinators and control valves;
- safely load and unload liquid and dry chemicals;
- keep records and prepare reports;
- estimate and justify budget requests for supplies and equipment;
- start-up or shut down pumps as necessary to regulate system flows and pressures;
- perform efficiency tests on pumps and related equipment;
- troubleshoot minor electrical and mechanical equipment problems and correct them;
- detect hazardous atmospheres in confined spaces and correct before entry;
- conduct safety inspections, follow safety rules for waterworks facilities and also develop and hold tailgate safety meetings;
- troubleshoot and locate causes of water quality complaints;
- discuss with the public their concerns regarding the quality of the water they receive;
- communicate effectively with other operators and supervisors on the appropriate technical level;
- test, repair and maintain fire hydrants;
- locate and eliminate cross-connections or potential cross-connections; and
- read water meters.

## Appendix B-3

### Typical Duties for Wastewater Treatment Plant Operators

An operator is a person who daily performs activities primarily consisting of controlling any process, which affects the quality of the effluent of the wastewater treatment facility, be it a mechanical plant or a lagoon system. Duties may include performance of day-to-day maintenance, laboratory tests, administration, special studies or engineering work so long as the primary function involves process control. For example:

- start up, shut down and make periodic operating checks of plant equipment such as pumping systems, chemical feeders, auxiliary equipment (blowers, aerators, compressors), and measuring and control systems. Check integrity/security of treatment facility such as lagoon dykes, fences, gates, overflows, transfer/discharge valves;
- perform preventive maintenance, such as lubrication, operating adjustments, dyke maintenance, cleaning and painting equipment; and
- load and unload chemicals such as chlorine cylinders, bulk liquids, powdered chemicals and bagged chemicals using chemical-handling equipment such as fork lifts, hoists and by hand;
- perform corrective maintenance on plant mechanical equipment, for example chemical feed pumps and small units;
- maintain plant records including operating logs, daily diaries, monthly and annual reports, chemical inventories, equipment inventories/operating records, data logging duties, times and volumes of lagoon transfer and discharge;
- monitor the status of plant operating guidelines such as flows, pressures, chemical levels and water quality indicators by reference to measuring systems and make appropriate process changes;
- collect representative wastewater samples and perform/have performed laboratory tests on samples for BODs, Suspended Solids, chlorine residual and other tests as required;
- order chemicals, repair parts and tools;
- estimate and justify budget needs for equipment and supplies;
- conduct safety inspections, follow safety rules for plant operation and also develop and conduct tailgate safety meetings;
- discuss water pollution control with the public, conduct plant tours (especially school children), and participate in department/municipal public relations programs;
- communicate effectively with other operators and supervisors on the appropriate technical level;
- make calculations to determine chemical feed rates, flow quantities, detention and contact times, hydraulic loading, as required for plant operation;
- interpret laboratory results and make appropriate process changes to ensure optimum plant operation;
- fulfill all requirements of your facility's Approval to Operate;
- clean and dispose of debris from bar screens, grit tanks and sumps in a safe and acceptable manner;
- make or direct emergency repairs or adjustments to the facilities without compromising pollution control;
- monitor impact of effluent on receiving stream, drainage courses, storage area and receiving area;
- manage the treatment and disposal of sludge;
- establish and adjust any chemical feed rates; and
- monitor and adjust rates of generation, return and wasting of sludge.

## Appendix B-4

### Typical Duties for Wastewater Collection Operators

An operator is a person who daily performs activities primarily consisting of controlling the collection network, which affects the quality of the wastewater and the reliability of wastewater collection system and its appurtenances. Duties may include performance of day-to-day installation, operation and maintenance of wastewater collection sewers, manholes and pumping or lift stations, laboratory tests, administration, special studies or engineering work with respect to lift stations, pumping stations, transmission lines, so long as the primary function involves control of the collection network. For example:

- place barricades, signs and traffic cones around work sites to protect operators and the public;
- excavate trenches and install shoring;
- lay, connect and test sewer lines;
- tap into sewer lines;
- flush and clean sewer lines;
- read and update wastewater collection system maps and “as built” plans;
- operate and maintain wastewater lift stations;
- observe pump motors and detect unusual noises, vibration or excessive heat;
- adjust and clean pump seals, packing glands and mechanical seals;
- repair and overhaul pumps, motors, chlorinators and control valves;
- safely load and unload liquid and dry chemicals;
- keep records and prepare reports;
- estimate and justify budget requests for supplies and equipment;
- start up or shut down pumps as necessary to regulate system flows and pressures;
- perform efficiency tests on pumps and related equipment;
- troubleshoot minor electrical and mechanical equipment problems and correct them;
- detect hazardous atmospheres in confined spaces and correct before entry;
- conduct safety inspections, follow safety rules for waterworks facilities and also develop and hold tailgate safety meetings;
- troubleshoot and locate causes of consumer complaints;
- respond to any public concerns regarding pollution control;
- communicate effectively with other operators/supervisors on the appropriate technical level;
- check pumping station or lift station ventilation system; and
- locate and eliminate cross-connections or potential cross-connections.