Western Plains
PUBLIC HEALTH

PRACTICES AND STANDARD OPERATING PROCEDURES FOR PUBLIC AND SEMI-PUBLIC AQUATIC VENUES

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INTENT:

The improper design, operation, and maintenance of aquatic venues can adversely affect public health and safety. Proper operation protects the bather against infection transmission through the pool, infection transmission through the bathhouse, chemical safety and physical injury within the aquatic venue area. In accordance with the authority granted in North Dakota Century Code Chapter 23-35-08, Western Plains Public Health (WPPH) hereby provides the minimum standards and criteria for design, operation, and maintenance of aquatic venues. These standards apply to the counties that fall within the jurisdiction or control of WPPH. The purpose of the rules is to protect the health, safety, and welfare of the residents and future residents of Western Plains Public Health's jurisdiction.

I. DEFINITIONS

1.1 "Aquatic Venue" means an artificially constructed structure or modified natural structure where the general public is exposed to water intended for recreational or therapeutic purpose and where the primary intended use is not watering livestock, irrigation, water storage, fishing, or habitat for aquatic life. Such structures do not necessarily contain standing water, so water exposure may occur via contact, ingestion, or aerosolization. Examples include swimming pools, wave pools, lazy rivers, surf pools, spas *(including spa pools and hot tubs)*, therapy pools, waterslide landing pools, spray pads, and other interactive water venues.

1.2 "Public swimming pool" means any swimming pool usually open to any member of the public. This includes but is not limited to municipal, apartment, lodging facilities, and recreational facilities.

1.3 "Superchlorination/shock treatment" means adding an extra large dose of 8-10 mg/l (ppm) of chlorine or the use of a non-chlorine "shock" product (according to manufacturers directions) to oxidize organic compounds, kill and remove algae, and other contaminants from the water. Also referred to as "hyperchlorination".

1.4 "Breakpoint" means the point in a rising chlorine residual at which the concentration of available chlorine becomes great enough to oxidize all organic matter and ammonia compounds in a pool completely. Chlorine added thereafter will be in an uncombined or free state. Breakpoint is characterized by a sudden drop in total available chlorine. The magnitude of the drop depends upon the amount of combined chlorine present and other factors.

1.5 "Chlorine" means chlorine products that are EPA-Registered for use as sanitizers or disinfectants in aquatic venues or spas in the United States are permitted.

1.6 "Total chlorine" is the remaining chlorine concentration after chlorine demand of water is met. Total chlorine = free available chlorine + combined chlorine.

1.7 "Free available chlorine" is the concentration of chlorine available for disinfection.

1.8 “Combined chlorine” is the concentration of chlorine combined with organic and inorganic nitrogen compounds in the water. Combined chlorine is not as effective for disinfection and can be a cause of eye irritation.

II. APPROVAL OF PLANS AND LICENSURE

No person, firm or corporation shall construct, alter, or reconstruct any public or semi-public aquatic venue without submitting the plans and specifications to the state plumbing board and appropriate local public health authority for approval. All plans must be signed by a licensed engineer within the state of North Dakota.

No person, firm or corporation shall engage in the operation of a public or semi-public aquatic venue without first obtaining an annual license from Western Plains Public Health. The annual license fee shall be set by WPPH Board of Health and renewed annually.

Western Plains Public Health may inspect or cause to be inspected, all public or semi-public aquatic venues within their jurisdiction at such times as it may deem necessary to carry out the intent of this code.

III. STAFF QUALIFICATIONS

3.1 Each public aquatic venue must be supervised by a person qualified in the fields of CPR, first aid, equipment operation, facility maintenance and pool sanitation.

3.2 Lifeguards shall be provided at municipal public swimming pools as currently required by American Red Cross and YMCA standards. Individuals are considered qualified in lifeguard training, CPR and first aid if they hold an appropriate Red Cross or YMCA certification.

3.3 Operators of a public aquatic venue shall have completed an operator training course that is recognized by the local public health unit. Operators shall have a current certificate or written documentation accessible to the local public health unit showing completion of an operator training course. These records shall be available on site for inspection by the local public health unit for each operator employed at or contracted by the site.

IV. AQUATIC VENUE CONSTRUCTION

4.1 All aquatic venue materials must be non-toxic, durable, waterproof and easily cleanable. The color of the pool basin and sides if painted must be either white or light in color.

4.2 The pool basin and sides must be smooth, free of cracks, leaks, and protrusions.

4.3 Bather loads for swimming pool facilities will be determined as follows:

a. Spas/whirlpools: allow one bather per 10 square feet (.93 square meters) of pool area.
b. Indoor swimming pools: allow one bather per 24 square feet (2.23 square meters) of pool area.

c. Outdoor swimming pools: allow one bather per 27 square feet (2.5 square meters) in water depths over 5 feet (1.52 meters) deep and one bather per 15 square feet (1.4 square meters) in water depths less than 5 feet (1.52 meters) deep.

V. AQUATIC VENUE WATER QUALITY

5.1 The water supply serving the aquatic venue must meet the requirements of the North Dakota Department of Health for potable water.

5.2 Every aquatic venue shall be provided with testing equipment for the determination of disinfectant residuals and pH concentration. The disinfectant residual tester shall have a range of at least 0.0 to 10.0 ppm. The pH tester shall be able to indicate pH between 6.0 and 8.0. Test kit chemicals shall be replaced according to manufacturer's recommendations. Chemicals must be stored in accordance with manufacturer's recommendations.

5.3 If the main drain of the pool is not visible due to cloudy water, no swimming shall be allowed and the pool shall be closed until the water is clear enough to see the main drain. The recirculation system shall be operated continually 24 hours per day during months of operation.

5.4 Swimming may not be permitted when water temperature falls below sixty-five degrees Fahrenheit (18 degrees Celsius). Spa water shall not exceed one hundred four degrees Fahrenheit (40 degrees Celsius). Therapy pool temperatures may exceed one hundred four degrees Fahrenheit (40 degrees Celsius) with the approval of the local public health authority.

5.5 Minimum free available chlorine concentrations shall be maintained at all times in all areas according to the following table values:

Type	**Not Using Cyanuric Acid**	**Using Cyanuric Acid**
Aquatic Venue	1.0-10 ppm	2.0-10 ppm
Spa	3.0-10 ppm	NA

5.6 The operator shall ensure the aquatic venue takes action to reduce the level of combined chlorine (chloramines) in the water when the level exceeds 0.4 ppm (mg/L). Such actions may include but are not limited to: 1) Superchlorination; 2) Water exchange; or 3) patron adherence to appropriate bather hygiene practices.

5.7 Aquatic venue water shall be maintained with a pH between 7.2 and 7.8.

5.8 Keep the pool surface free of floating dirt and film and the pool bottom free of sediment.

5.9 Require all patrons to take a cleansing shower using warm water prior to entering the pool.

5.10 Exclude all patrons showing symptoms of infection from entering the swimming pool.

5.11 Collect monthly samples of the pool water and submit to a laboratory certified by the North Dakota Department of Health for bacteriological analysis. Failure to perform the testing as required may result in closure of the pool.

Any detection of coliform bacteria, a bacteria count greater than 200 ml from a standard plate count or a voided presumptive bacteria test will require superchlorination/shock treatment and resampling of the pool water. The pool may reopen once disinfectant residuals reach safe levels. In the event the resample fails for fecal coliform bacteria, the facility will close until a negative sample is achieved.

5.12 All swimming aquatic venue must be superchlorinated/shock treated to between ten and fifteen ppm prior to seasonal start-up and at any time during operation when required.

5.13 Swim diapers shall be worn by all infants and children entering the water that are not potty-trained.

5.14 All aquatic venues shall have a contamination response plan for responding to formed-stool contamination, diarrheal-stool contamination, vomit contamination, and contamination involving blood.

The contamination response plan shall include procedures for response and cleanup, provisions for training staff in these procedures, and a list of equipment and supplies for clean-up.

5.15 In the event of a fecal or vomit contamination in an AQUATIC VENUE, the QUALIFIED OPERATOR shall immediately close the AQUATIC VENUE to swimmers until remediation procedures are complete. Contaminating material shall be removed *(e.g., using a net, scoop, or bucket)* and disposed of in a sanitary manner. Before proper remediation can take place, the aquatic venue water shall be treated as follows:

a. Check to ensure that the water's pH is 7.5 or lower and adjust if necessary;
b. Verify and maintain water temperature at 77°F (25°C) or higher;
c. Operate the filtration/RECIRCULATION SYSTEM while the POOL reaches and maintains the proper free CHLORINE concentration during the remediation process;
d. Test the CHLORINE RESIDUAL at multiple sampling points to ensure the proper free CHLORINE concentration is achieved throughout the POOL for the entire DISINFECTION time; and
e. Use only non-stabilized CHLORINE products to raise the free CHLORINE levels during the remediation.

5.16 Formed-stool/vomit remediation:

a. Formed-stool/vomit contaminated water shall have the FREE available chlorine checked and the FREE available chlorine raised to 2.0 ppm *(if less than 2.0 ppm)* and maintained for at least 25 minutes before reopening the AQUATIC VENUE.
b. In AQUATIC VENUE water that contains CYA or a stabilized CHLORINE product, water shall be treated by doubling the inactivation time.

5.17 Diarrheal-stool remediation:

a. Check the FREE available chlorine and then raise the FREE available chlorine to 20.0 mg/L and maintain for at least 12.75 hours (*or an equivalent time and concentration to reach the CT INACTIVATION VALUE*) before reopening the AQUATIC VENUE.
b. In aquatic venue water that contains CYA or a stabilized chlorine product, water shall be treated by Raising the FREE CHLORINE RESIDUAL to 20 mg/L for at least 28 hours; 30 mg/L for at least 18 hours; or 40 mg/L for at least 8.5 hours, which is needed to reach the CT INACTIVATION VALUE; and
c. Measuring the inactivation time required, which shall start when the AQUATIC VENUE reaches the intended FREE CHLORINE RESIDUAL level.

5.18 Blood contamination of a properly maintained AQUATIC VENUE'S water does not pose a public health risk to swimmers.

5.19 For remediation and testing of AQUATIC VENUES suspected of being contaminated with *Legionella* the QUALIFIED OPERATOR shall:

a. Close the SPA tub to BATHERS immediately, and shut down the hydrotherapy jets and circulation pumps, but do not drain the water.
b. Contact the state or local public health agency having jurisdiction for information about laboratory testing for *Legionella*. If the health department determines that laboratory testing is needed, water and biofilm samples should be taken from the SPA tub, hydrotherapy jets, drain, and filters/filter media to test for *Legionella* by culture before taking the steps below. Sampling and laboratory testing are complicated and should always be done in collaboration with your state or local public health agency and a laboratory with *Legionella* testing expertise.
c. Proceed as directed below after samples have been taken; it is not necessary to wait for laboratory test results. However, the SPA should not be reopened to BATHERS until all test results are negative for *Legionella*.

i. Scrub vigorously all SPA surfaces, skimming devices, circulation components with FREE CHLORINE at a minimum concentration of 5 parts per million (ppm) to remove any biofilm or slime. After scrubbing, rinse the SPA with clean water and flush to waste.
ii. Drain all water from the SPA. Dispose of the water to waste or as directed by the local regulatory authority.
iii. Replace filters (for cartridge or DE filters) or filter media (for sand filters). Bag these filters and dispose as normal solid waste.
iv. Inspect the SPA thoroughly for any broken or poorly functioning components such as valves, sensors, tubing, or DISINFECTANT feeders. Make any needed repairs.
v. Refill the SPA with clean water.
vi. SUPERCHLORINATE using 20 ppm FREE CHLORINE. a.) Keep the hydrotherapy jets off and let the SUPERCHLORINATED water circulate for 1 hour in all of the components of the SPA including the compensation/surge tank, filter housing, and piping. b.) Turn on the hydrotherapy jets to circulate the

SUPERCHLORINATED water for 9 additional hours. Ensure that 20 ppm of FREE CHLORINE is maintained in the system for the entire 10 hours.

vii. Flush the entire system to remove the SUPERCHLORINATED water from all equipment prior to repeat sampling.

viii. Take repeat samples for culture-based laboratory testing to confirm that *Legionella* has been eliminated. Water and biofilm samples should be taken from the SPA tub, hydrotherapy jets, drain, filters/filter media, and any part of the SPA that originally tested positive for *Legionella*.

ix. Keep the SPA closed to BATHERS until this repeat testing has confirmed the elimination of *Legionella*. If laboratory testing is positive for *Legionella*, repeat steps 4–11 until all testing is negative for *Legionella*. When all tests are negative, the SPA can be reopened to BATHERS.

x. Ensure that halogen (CHLORINE or bromine) and pH levels meet local and state STANDARDS before reopening the SPA to BATHERS. Maintain water quality according to local and state STANDARDS.

xi. If the SPA is associated with an outbreak, the following continued laboratory testing schedule shall be conducted: conduct culture-based testing every 2 weeks for 3 months, then every month for 3 months to ensure complete elimination of *Legionella*. If at any time during this laboratory testing schedule *Legionella* is found, DISINFECT again and start the testing schedule over. For AQUATIC VENUES that continue to grow *Legionella*, consider hiring a consultant with expertise in *Legionella.*

VI. MECHANICAL EQUIPMENT

6.1 The recirculating system shall consist of pumps, hair and lint catchers and filters, together with all necessary pipe connections to the inlets and outlets of the pool and for backwashing of the filters. Part of the recirculating system must provide for disinfecting the water and adding any necessary chemicals and for providing make-up water.

6.2 Flow rates/turnover times shall be observed according to the following tables:

Aquatic Venue Maximum Allowable Turnover Times

Type of Pools	Turnover Maximum
Activity Pools	2 hours or less
Diving Pools	8 hours or less
Interactive Water Play*	0.5 hours or less
Lazy River	2 hours or less
Plunge Pools	1 hour or less
Runout Slide	1 hour or less
Wading Pools*	1 hour or less
Wave Pools	2 hours or less
All Other Pools	6 hours or less
Surf Pools	Submit engineering justification from equipment manufacturer

*Secondary disinfection system recommended

Aquatic Venue Maximum Allowable Turnover Times for Spa, Therapy*, and Exercise Pools

≤ 72º-93ºF (22º-34ºC)	> 2500 gals/person (9.46 m^3)	4 hours or less
≤ 72º-93ºF (22º-34ºC)	> 450 gals/person (1.7 m^3)	2 hours or less
≤ 72º-93ºF (22º-34ºC)	≤ 450 gals/person (1.7 m^3)	1 hour or less
≥ 93-104ºF (34º-40ºC)	All	0.5 hours or less

*Secondary disinfection system recommended

6.3 Suction cleaners either of the portable type or as part of the permanent piping system are required.

6.4 All portions of the potable water supply serving the aquatic venue and auxiliary facilities must be protected against backflow. Potable water introduced into the pool shall be supplied through an air gap or an approved-type backflow preventer. All aquatic venue equipment shall be installed and valved in accordance with the North Dakota State Plumbing Code.

6.5 A rate-of-flow indicator capable of measuring at least one and one-half the design flow rate must be installed on the filter effluent line leading to the aquatic venue. The indicator

must be calibrated to read in gal/min or l/min and capable of measuring both water for filtration and backwash where applicable.

6.6 Pressure/vacuum gauges are required on all filter systems to indicate a need for filter cleaning or back-washing.

6.7 All aquatic venues with only one main drain per recirculation pump shall be equipped with “anti-vortex plates”. All “anti-vortex plates” will be secured in a way that they can only be removed with the use of tools. In the event a main-drain cover is broken or not in place, the pool facility will be immediately closed until the cover is replaced. If two or more main drains are used they must be at least three feet apart, shall be connected in parallel and shall not permit any drain to be individually valved off.

6.8 All drains will have entrapment prevention that adhere to the requirements of the Virginia Graeme Baker Pool and Spa Safety Act (VGB Act).

VII. DISINFECTION EQUIPMENT

7.1 Equipment must be provided to adequately disinfect the aquatic venue at all times. The most common means of pool disinfection is through the application of chlorine.

7.2 All public aquatic venues must be equipped with automatic chemical feeding equipment for controlling disinfectant and pH.

VIII. BATHHOUSE

8.1 When provided, the bathhouse must be located to provide entrance to the pool area near the shallow end of the pool only.

8.2 Floors must be of smooth, nonslip, impervious construction and sloped to drains at one quarter inch (6.4 millimeters) per foot (30 centimeters). Adequate floor drains must be installed in all areas subject to water accumulation.

8.3 Dressing rooms and furnishings must be of simple design and must be constructed of impervious and smooth materials that will permit proper cleaning and disinfection. Partitions in rooms shall terminate six inches (15 centimeters) above the floor.

8.4 Adequate hose bibs having backflow prevention must be provided for area cleanup.

8.5 Natural or artificial ventilation must be provided.

8.6 All area lighting shall provide at least ten foot-candles at a point three feet (1 meter) from the floor and must be available during both day and night.

8.7 Sufficient space must be allowed for dressing and clothing storage.

8.8 Showers shall be located adjacent to dressing rooms. Warm water must be provided at all shower heads. At least one shower head per forty patrons is required.

8.9 At least one sink with hot and cold running water shall be provided for each sixty patrons. Soap dispensers, single use hand towels, or mechanical dryers shall be provided for lavatories. At least one water closet and one urinal per 60 males and one water closet per 30 females shall be provided.

8.10 An approved potable water supply shall be provided. Angle jet or other approved type drinking fountains shall be provided.

8.11 All pool facilities and bathhouses serving the public shall meet the requirements of the Americans with Disabilities Act.

8.12 The bathhouse will be cleaned and disinfected daily.

8.13 A diaper changing station or designated area is recommended.

IX. DECKING/POOL AREA

9.1 Pool decks and walkways shall be cleaned and disinfected daily.

9.2 A six foot (2 meters) high chain-link fence or equivalent enclosure shall completely encircle the pool area.

9.3 Diving areas shall meet current standards of the National Swimming Pool Foundation.

9.4 All steps or stairs entering a public pool shall have nonslip surfaces. They shall have sturdy and easily visible handrails on either side and at the top leading out over the water. Ladders or stairs must be located at the shallow end and at both sides of the deep end of the pool.

9.5 The depth of water in the pool shall be plainly marked at points of maximum and minimum depths, at the break between the deep and shallow areas, and at intermediate depths spaced at not more than 25 foot (7.62 meters) intervals. The markers shall be placed on the pool basin wall at or above the water level and on the top edge of the deck.

The markers shall be at least 4 inches (10.2 centimeters) in height and of contrasting color and shall be located on both sides and both ends of the pool. The depth or depths of water in a whirlpool or therapy pool must be plainly marked above the water surface on the pool wall and/or on the deck next to the pool.

All spas, hot tubs, and whirlpools shall have a minimum of 2 permanent depth markers indicating the maximum water depth. Depth markers shall be spaced at no more than 25 foot (7.6 meters) intervals and shall be uniformly located around the perimeter of the spa. The markers shall be placed on the pool wall, at or above the water level, and on the edge of the deck, be at least 4 inches (10 centimeters) in height and of contrasting color.

9.6 A lifeline must be provided across the pool water at or near the break in grade between the shallow and deep portions of the pool. Pools constructed with a continuous bottom slope where no distinct break exists, shall place a lifeline at a location where the depth

is five feet. It must be at least 3/4 inch (1.9 centimeter) in diameter, supported by floats, and must be securely fastened to the pool walls with a non-corrosive recessed connector.

9.7 All walk and deck areas shall completely encircle the pool, be ample in size, and restricted to use of those attired for aquatic activities. The finish texture of the walks and decks must be nonslip and comfortable to bare feet. Carpeting, floor matting or other porous material which interfere with floor cleaning or provide a place for bacteria and fungi to multiply are prohibited.

All walks and decks must be uniformly sloped to drains or points at which the water will have a free unobstructed flow to points of collection away from the pool and the pool gutter system. Sidewalks and deck areas shall be no less than eight feet wide (2.4 meters) and be free of open cracks and/or broken areas.

9.8 At least one set of lifesaving equipment must be provided consisting of:

a. One or more poles at least one-half the width of the pool plus two feet, but not to exceed sixteen feet (5 meters) in length, having a shepherd's crook with an aperture of at least eighteen inches (46 centimeters) between the tip of the hook and the pole.
b. One or more U.S. Coast Guard approved throwing rings having a minimum diameter of eighteen inches (46 centimeters) equipped with one-quarter-inch line (19 centimeters) not less than one-half the width of the pool.

9.9 A telephone must be provided for emergency use.

X. WADING POOLS

10.1 Wading pools shall be in a separate enclosed area, physically set apart from the swimming pool. A fence or partition of sufficient height shall separate and prevent waders from entering the main pool area.

10.2 The depth of the wading pool must not exceed twenty-four inches (61 centimeters).

10.3 Water supplied to the wading pool must meet the same water quality standards as those required for aquatic venues.

XI. RECORDS

A daily operation record of the recirculation system, chemical additions, bather load, pH, and disinfectant residuals shall be kept for all pool facilities. The pH and disinfectant residuals shall be monitored and recorded a minimum of three times daily and be performed during bather activity. A water contamination response log shall be completed and stored on site for all water contamination events for one year.

XII. GUIDELINES FOR POOL CLOSURE:

Aquatic facility closure is required if:

1. There is inadequate recirculation or filtration, insufficient or excessive disinfectant or the pool fails to meet other chemical standards, water clarity is lacking and the pool bottom is not visible from the pool deck.

2. The bottom drain plate or grate is not in place, not secured, or is broken.

3. An unsafe condition is present, such as a broken electrical pool light, or a fecal release in the water..

4. Water temperature is over 104°F (40 degrees Celsius).

5. Failure to monitor.

XIII. COMPLIANCE

All public and semi-public aquatic venues shall meet minimum standards set forth in the previous sections.

Any person who violates or refuses to comply with any provisions of these regulations is guilty of a Class B Misdemeanor as specified under NDCC Section 23-35-13.