

SWIMMING POOL/SPA RULES AND REGULATIONS

UPPER MISSOURI DISTRICT HEALTH UNIT

www.umdhu.org



Effective July 27, 1993
Revised March 1, 1999
Revised March 2006
Revised April 2013
Revised January 2016

Forward

This manual has been prepared to aid certified pool operators, aquatic facility operators, design engineers and other persons interested in the proper daily operation of a swimming pool following good public health practices. Proper pool operation protects bather against:

1. Infections transmitted through the pool water and facility equipment.
2. Infections transmitted through the bathhouse facilities.
3. Physical injury with in and around the recreational aquatic facility.

Definite epidemiological evidence has been recorded to show transmission of infectious diseases through recreational waters. Definite proof of the transmission of eye infections, impetigo, ect, through the common bathroom is also known. Dermatitis, such as athlete's foot, is commonly transmitted in the bath facilities.

The primary responsibility of the certified pool operator/swimming pool manager/aquatic facility manager is to provide clean, healthful recreation. Rules must be understood and followed. Only safe equipment should be brought into the facility environment.

Another responsibility of the certified pool operator or owner is that of protection against physical injury within and about the pool area. The attendants should have full charge of the bathing facilities and have the authority to enforce rules and safety and sanitation.

We believe that if the operation practices outlined in this manual are observed, your recreational aquatic facility can serve as a healthy source of recreation.

1. Definitions –

1. “**Air gap**” is defined as: (a) Shall mean the unobstructed vertical distance through atmosphere between the water and supply inlet and the flood level rim of the receiving unit; and (b) Is at least two (2) times the diameter of the water supply outlet or pipe or six (6) inches, whichever is the smaller distance. (c) An approved automatic feeder is also required.
2. “**Approved**” shall mean acceptable to the Department (Upper Missouri District Health Unit) based on a determination of conformity with principals, practices, and generally recognized standards that protect public health.
3. “**Automatic Feeder**” shall mean a chemical feeder that has valves controlled by electronic equipment to deliver needed chemicals. (Must be an approved automatic feeder)
4. “**Bather Load**” shall mean the total number of bathers or users in the water at a given moment or during a specific period of time.
5. “**Breakpoint Chlorination**” shall mean the point in raising chlorine residual at which the concentration of available chlorine becomes great enough to completely oxidize all organic matter and ammonia compounds (combined chlorine) in a pool.
6. “**Cartridge Filter**” shall mean a filter that uses a replaceable and disposable porous element as the filter medium.
7. “**Certified Pool & Spa Operator**” or “**CPO**” shall mean an individual who has satisfied the class work requirements and demonstrated knowledge of course material by passing the examination administered by the National Swimming Pool Foundation.
8. “**Chemical Feeder**” shall mean a device that dispenses chemicals into water at a predictable rate. The device may be controlled either automatically or manually.
9. “**Chlorinator**” shall mean a chemical feeder used to dispense any form of chlorine.
10. “**Circulation**” shall mean the flow or movement of water through a given area or volume that in this code includes the pool or spa basin, pump, filter, heater, chemical feeders, chlorinators, piping and any other appurtenance or device related to these components.
11. “**Clarity**” shall mean the degree of transparency of pool water.
12. “**Combined Chlorine**” or “**Chloramines**” shall mean the chemical species that forms when chlorine chemically bonds to ammonia, chloramines treated potable water or fertilizers.
13. “**Competition Pool**” shall mean any pool intended for use for accredited competitive aquatic events. Competition pools may also be used for recreation and instruction.
14. “**Cove**” shall mean the curved transition from the wall to the floor in a pool or spa.
15. “**CT inactivation value**” shall mean the concentration (C) of free chlorine in ppm (or mg/L) multiplied by time (T) in minutes at a specific pH and temperature. CT shall mean contact time.

16. **“Deck”** shall mean the area immediately surrounding or next to a pool, spa, or recreational aquatic facility.
17. **“Deep areas”** shall mean areas of the pool exceeding five (5) feet in depth.
18. **“Department”** shall mean the Environmental Health Division of the Upper Missouri District Health Unit or its designated agent.
19. **“Diatomaceous Earth Filter”** shall mean a filter designed to use the fossilized skeletons from diatoms on a filter element.
20. **“Disinfection”** shall mean the destruction of microorganisms that may cause disease.
21. **“Diving Pool”** shall mean any pool that is designed and constructed primarily for diving and does not have a shallow end.
22. **“Facility”** shall mean the site of any business, firm, club, park, city, school, institution or residence.
23. **“Filter”** shall mean a mechanical device for separating suspended particles from water. Refers to the complete mechanism or to any component parts.
24. **“Filter Media Rate”** shall mean the rate of flow of water through a filter during a set period of time expressed in gallons per minute per square foot of effective filter area.
25. **“Free Chlorine”** shall mean the portion of total chlorine that is not combined chlorine and that is available as HOCl and OCl⁻. This is the portion of total chlorine that reacts with DPD chlorine test.
26. **“Full Stomach Vomit”** shall mean for the purpose of this document the emptying of all the stomach’s contents as a result of an illness as opposed to vomit from swallowing too much water, overexertion, or play.
27. **“Interactive Water Fountains”** shall mean any recreational area with no aboveground impoundment of water that features water sprays, dancing water jets, waterfalls, dumping buckets, water cannons or any other such feature.
28. **“Lifeguard”** shall mean an individual with the proper training and skills designed to keep patrons of aquatic facilities safe in and around water.
29. **“Maximum Bather Load”** shall mean the maximum usage of the pool calculated based on the depth, type and surface area.
30. **“NTU”** shall mean nephelometric turbidity unit. NTU’s are a unit used to designate the opacity of a liquid based on the readings of a nephelometer.
31. **“Person”** shall mean: any individual, LLC, firm, partnership, association, corporation, company, society, government agency, club, or organization of any kind.
32. **“Plunge Pool”** shall mean a pool located at the exit end of a waterslide flume and is intended and designed to receive sliders emerging the flume.
33. **“Pool”** shall mean any structure, basin, chamber, or treatment tank containing an artificial body of water for swimming, diving, relaxation, recreational bathing, or wading. Unless otherwise noted, the terms “pool” or “swimming pool” will be used to refer to all swimming, diving, training, plunge, wading pools or interactive water fountains (where applicable).
34. **“Pools with wading areas”** shall mean any pool that has a portion of the shallow end with a maximum depth of twenty four (24) inches.
35. **“Potable”** shall mean water that is safe and suitable for drinking.

36. “**ppm**” shall mean parts per million and is equivalent to milligrams per liter when the medium is water.
37. “**Private Residential Pool**” shall mean a pool, greater than 2 feet in depth with a circulation system, that is connected with a single family residence or owner occupied duplex located on private property and under the control of the homeowner. The use of which is limited to family members or the families invited guests. A private residential pool is not a pool used as part of a business.
38. “**Public Swimming Pool**” shall mean any swimming pool usually open to any member of the public. Any swimming pool at which a fee is charged to swim shall be considered a public swimming pool regardless of where that pool is located.
39. “**Public Sewer**” shall mean a sewage disposal facility provided by a utility, municipality, conservancy district, or regional sewer district.
40. “**Public Water Supply**” shall mean water supplied by a utility, municipality, conservancy district, regional water district, or water corporation.
41. “**Recirculating System**” shall mean the entire system of pipes, pumps, and filters that allow water to be taken from the pool or spa, filtered, treated and then returned to the pool.
42. “**Recreational Aquatic Facility**” shall mean a water play area used for bathing, swimming or barefooted activities to include but not limited to: public pools, semi-public pools, wading pools, spray pads, spray grounds, spas, lazy rivers, special purpose pools, plunge pools, water slides, flumes, speed slides wave pools, sand bottom pools, vortex pools and zero entry pools.
43. “**Recreational Water Illness**” or “RWI” both microbial and chemical are caused by swallowing, inhalation of aerosols or contact with contaminated water or air in swimming pools, hot tubs, water parks, water play areas, interactive fountains, lakes, rivers, or oceans. RWIs can be a wide variety of infections, including gastrointestinal, skin, ear, respiratory, eye, neurologic and wound infections. The most commonly reported RWI manifestation is diarrhea. Diarrheal illnesses can be caused by germs, such as *Crypto* (short for *Cryptosporidium*), *Giardia*, *Shigella*, norovirus and *E. coli* O157:H7.
44. “**Residual**” shall mean the concentration of a chemical in water.
45. “**Sand Filter**” shall mean a device that uses sand or sand and gravel as the filter medium.
46. “**Sanitary Facilities**” shall mean flush toilets, hand washing lavatories, and showers.
47. “**Semi-public Swimming Pool**” shall mean any swimming pool (other than a residential pool or a public pool) that is intended for use collectively by numbers of persons for swimming or bathing regardless of whether a fee is charged for each use.
48. “**Shallow Areas**” shall mean those portions of a pool ranging in water depth from two (2) to five (5) feet.
49. “**Spa**” shall mean any whirlpool, hot tub, Jacuzzi, health pool or treatment pool which is not drained, cleaned or refilled for each use with a water agitation system in addition to the recirculation system. A spa is any small recreational water vessel designed for “soaking” as opposed to swimming. Spas may be equipped with features and devices such as seats or benches for sitting, jets, heated water, ect.
50. “**Special Purpose Pool**” shall mean any pool used for purposes other than recreational to include but not limited to competition, therapy and treatment.

51. “**Spray Grounds**” shall mean the buildings and appurtenances used in conjunction with a splash pad in which sprayed water is continually drained and collected in a treatment and recirculation system or drained into a public sewer.
52. “**Swimming Pool Slide**” shall mean any device use to enter a pool by sliding down an inclined plane or equipment to a playground slide.
53. “**Total Chlorine**” shall mean the total of free chlorine and combined chlorine in water.
54. “**Training Pool**” shall mean any pool at a facility that is not the main pool and is not a spa and is great than twenty four (24) inches in depth, but is not great then three (3) feet in depth.
55. “**Treatment Tank**” shall mean the enclosed pool, not intended for bathing, used at spray grounds to treat the prior to recirculation it through the features a the facility.
56. “**Turnover Rate**” shall mean the period of time, expressed in hours, required to circulate a volume of water equal to the maximum pool-water capacity through the pool-water treatment system.
57. “**Wading Pool**” shall mean any pool at a facility that is not the main pool and is not a spa and in no greater than twenty four (24) inches in depth.
58. “**Waterslide**” shall mean a recreational ride that is a sloped trough-like or tubular structure using water as a lubricant and method of regulating rider velocity and terminated in a plunge pool, swimming pool, or a specifically designed deceleration structure.
59. “**Wave Pool**” shall mean any pool having a bottom sloped upward from the deep end to the surface at the shallow end with equipment installed at the deep end to create wave motions in the water.
60. “**Zero Depth Pool**” shall mean any pool with a bottom sloped upward from the deep end to the surface level at the shallow end.

Regulations of Upper Missouri District Health Unit

The following rules and regulations pertain to the inspection, operation, licensing and monitoring requirements of the public, semi-public, spa facilities, and recreational aquatic facilities within the boundaries of the Upper Missouri District Health Unit (UMDHU).

2.

- A. These rules and regulations require that all public, semi-public, spa facilities, and recreational aquatic facilities be annually inspected by the UMDHU District Health Officer or their designee, and provides regulations and standards necessary to make these facilities safe and healthful. If deemed necessary by the Environmental Health Division of UMDHU, a facility may be inspected more often.
- B. During the facilities months of operation, each public, semi-public, spa facility, and/or recreational aquatic facility shall submit a water sample from the recreational water to a laboratory certified by the North Dakota State Department of Health (NDDoH), for a bacteriological analysis. A minimum of one sample per month must be submitted for each pool, spa, and/or recreational aquatic facility located at that facility. Samples must be submitted for each month that the recreational waters are open for use by the public. If a water sample period is missed the facility will be closed until the time sample is submitted and results shown to be satisfactory. If a water sample tests unsatisfactory, the facility must follow that following procedures:
 - 1. The person in charge will close the pool, spa, and/or recreational aquatic facility immediately.
 - 2. The Certified Pool Operator (CPO) will super chlorinate the recreational water to the specifications mandated by UMDHU. The free chlorine will be reduced to the correct level.
 - 3. A new water sample will be taken and submitted.
 - 4. A sample will be submitted each week for the following two weeks, and each of those samples will have to pass before the pool, spa, and/or recreational aquatic facility will have to pass before it will be allowed to return to a monthly sampling schedule.
 - 5. Any inspection resulting in 5 or more critical violations will require a re-inspection as a result of a failed inspection shall be at a cost listed in the environmental fee schedule.
- C. The District Health Officer, or their designee, may temporarily close any facility that has been determined to be a health or safety hazard or in the event of a failure to comply with any of the requirements of this document, the department may abate or cause suspension of the use of such a facility until such time at the pool, spa, and/or recreational facility is no longer deemed a health or safety hazard.
- D. All public, semi-public, spa facility, and/or recreational aquatic facilities are required to apply for and to receive (at the discretion of UMDHU) a UMDHU swimming pool/spa license before opening for

use and operation, and to have a current license at all times while being open for use. The license must be obtained by January 1st of each year (or prior to start up for seasonal pools) from UMDHU, and is valid for one year unless revoked for cause. Licenses shall be renewed each year by January first. After January 31st, the license fee shall be double the regular fee, with the exception of seasonal facilities. The license must be posted in a visible place at the facility. The cost of the license shall be dictated by UMDHU fee structure. The license fee is non-refundable. The swimming pool/spa license is non-transferable. By purchasing a license, a person agrees to operate the facility in compliance with the regulations contained herein, and agrees that the license for that facility may be suspended or revoked for cause at any time.

- E. A person or organization may not construct, alter or reconstruct any public or semi-public pool, spa facilities and recreational aquatic facilities without submitting the plans and specifications to UMDHU for approval. No part of any facility may be constructed or modified before approval from UMDHU is obtained. The plans shall be drawn to scale and accompanied by proper specifications so as to permit a comprehensive engineering review of the plans including the piping and hydraulic details and shall include:
1. Plan and sectional views with all necessary dimensions of pool and/or spa and/or recreational aquatic facilities and surrounding areas.
 2. A piping diagram showing all appurtenances including treat facilities in sufficient detail, as well as appurtenant elevation data, to permit (allow) a hydraulic analysis of the system.
 3. The specifications shall contain details on all treatment equipment, including catalog identification of pumps, chlorinators, controllers, chemical feeders, filters, strainers, interceptors, related equipment and any other details involved in treatment.
- F. A public pool/spa and the related facilities and equipment must be operated and maintained in a safe and proper working condition so the facility poses no threat to the public's health or safety. The owner shall be responsible for compliance with these rules and regulations. Where another person has operational authority under an agreement with the owner, that person also has responsibility for compliance with these rules and regulations. The owner or operator of the facility must designate a trained operator who is responsible for the direct operation of the pool/spa/recreational facility whenever facility is open for use. The trained operator must be responsible for the daily operation of the pool/spa/recreational facility and ensure required testing is done and records are maintained. The trained operator, or a designated alternate trained operator, must be able to respond to emergency, unsafe and unsanitary conditions at any time the pool is open for use. The trained operator must assure other individuals who assist with chemical monitoring and pool equipment operation are trained for those functions. The owner or operator must ensure the designated trained operator is trained to operate the pool in compliance and as follows:
1. The trained operator must be trained in safe chemical handling and the use of protective equipment in addition to pool/spa/recreational facility operation and sanitation described in items B to D.

2. After January 1st, 2007, a trained operator must be certified as successfully completing a pool operator training course at least once every five years as specified in item C.
 3. Acceptable training courses are:
 - a. the National Swimming Pool Foundation Certified Pool Operator course; or
 - b. the National Spa and Pool Institute Tech I and Tech II courses (both required); or
 - c. the National Recreation and Park Association Aquatic Facility Operator course; or
 - d. other equivalent course deemed acceptable by UMDHU
- G. After January 1st, 2007, a copy of the trained operator's training certificate must be available for inspection at the facility whenever the pool is open for use.
- H. UMDHU or its agents shall have access to and may inspect any pool/spa/recreational facility at any time when the facility is open for use, or at any other reasonable time. Inspection shall include but not be limited to such activities as entering, evaluating, investigating, photographing, and securing any samples, or other evidence from any facility for purposes of enforcing this code. Refusal of inspection shall result in immediate suspension of or revocation of the license for that facility.
- I. If any type of injury or illness occurs at any pool/spa/recreational facility, the license holder shall report it to UMDHU within 24 hours. Failure to report the occurrence of injury or illness may result in suspension of the license for that facility.
- J. Rodents and vermin shall not be allowed to be found in any part of a pool/spa/recreational facility. If any kind of rodent or vermin infestation occurs, all efforts shall be made to eradicate the infestation. Openings to the outside shall be protected to prevent the entry of any animals by windows, doors or screens of at least a sixteen mesh to the inch.
- K. All domestic animals will be excluded from the basin of any pool/spa/recreational facility and a reasonable effort will be made to exclude all wild animals from any facility. If any non-vertebrate animals are found to be in the pool/spa/recreational facility, the procedures found in Appendix F for liquid stool contamination shall be followed.

Section 3: Regulations

3-1. Location, water supply, wastewater and general design:

- A. The proposed site of the swimming pool or spa facility shall have approved water supply and waste disposal facilities available.
- B. The following items shall be considered in determining the suitability of proposed sites for swimming pool and spa facilities: topography, protection from prevailing winds, the absence of trees in the near vicinity, distance from dusty roads, and distance from and direction to any industries producing smoke or obnoxious odors.
- C. The water supply serving the pool shall meet the requirements of the North Dakota Department of Health (NDDoH) for potable water. Prior to being used, a water supply shall meet the approval of UMDHU.
- D. UMDHU may approve the use of water from natural sources when special water treatment is provided so long as the combination of source water and special treatment yields water that meets all other requirements of this section.
- E. The water of any pool or spa shall be filtered and disinfected water.
- F. All wastewater produced at a swimming pool or spa facility shall be disposed of in an approved wastewater disposal system.
- G. If an onsite treatment system is used for wastewater disposal, the system must be approved by the appropriate agency, either UMDHU or the North Dakota Department of Health.
- H. All newly constructed pools or spas shall have piping to carry wastewater from the pool or spa, including any pool drainage or backwash water from filters, as an indirect waste pipe. When a pump is used to discharge wastewater to the drainage system, the pump discharge shall be installed as an indirect waste pipe. An indirect waste pipe is a pipe that does not connect directly with the drainage system but conveys liquid waste by discharging into a plumbing fixture, interceptor or receptacle that is directly connected to the drainage system.
- I. A wading pool shall have a maximum depth at the deepest point not greater than 24 inches.
- J. A wading pool may be constructed adjacent to the swimming pool, but it may not be part of the swimming pool, may not share a common water supply and circulation system and shall be separated from the swimming pool by a fence or partition sufficiently high to prevent bathers from entering the swimming pool area.
- K. A training pool shall have a maximum depth of three feet.
- L. A training pool may be constructed adjacent to a swimming pool and shall be separated from the swimming pool by a fence or partition of sufficient height to prevent bathers from entering the swimming pool area.

3-2. General facilities:

- A. Grass, earth and sand areas shall be a minimum of eight feet from the edge of the basin of any pool or spa. Any grass, earth or sand areas shall be designed and constructed to prevent the tracking of dirt, sand or any organic materials from those areas. Vegetation shall not be allowed to hang over the decking or basin of any pool or spa.
- B. A barrier shall be present to prevent access to the swimming pool or spa during any time when the pool or spa is not open for use. The barrier shall meet the following requirements:
 - 1. The top of the barrier shall be at least 72 inches above grade measured on the

- side of the barrier facing away from the pool or spa.
 2. The bottom of the barrier shall be no more than four inches above grade.
 3. Openings in the barrier shall not allow passage of a four inch or larger sphere.
 4. Barriers shall not have indentations or protrusions that would provide hand or foot holds usable to climb the barrier. The barrier shall be free of any protrusions or indentations that could pose a hazard.
 5. If the barrier is composed of horizontal and vertical elements:
 - a. The tops of the horizontal members shall be more than 45 inches apart. If the tops are less than 45 inches, then the horizontal elements shall be on the side facing the pool or spa.
 - b. Spacing between the vertical members shall not exceed one and three-quarter inches.
 - c. Decorative cutouts shall not have spacing in the cutouts greater than one and three-quarter inches.
 6. Maximum mesh size for chain link fences shall not exceed one and three-quarter inches square.
 7. If the barrier has diagonal members, the maximum opening formed by the diagonal members shall be one and three-quarter inches.
 8. Access gates shall be equipped with a lock.
 9. Gates shall open outward away from the pool or spa. Gates shall be self-closing and self-latching.
- C. Indoor pools without safety barriers may be located only in an area that can be locked during periods when it is not in use, or shall be located so that all parts of the pool, spa and decking can be kept under direct supervision at all times.
- D. Spas may be located in locker rooms that are used solely by adults, without the required barrier, if there is at least a railing around the spa to warn of its presence.
- E. Hose bibs of not less than three-quarter inch, each equipped with an approved backflow prevention device, shall be located in the pool area, not more than 75 feet apart, for cleaning of the entire pool area.
- F. A complete system of artificial lighting shall be provided for all pools, spas, bathhouses and dressing rooms that are to be used at night. All indoor pools shall be equipped with a system of artificial lighting. The artificial lighting system shall provide at least 100 foot candles of light at deck level.
- G. All aspects of the pool, spa, or any other part of the facility shall meet all aspects of the legally adopted ND electrical, mechanical, fire and building codes and any other code or regulation that has legal applicability to the facility.
- H. All pools and spas shall have a computed bather capacity. At no time shall a number of patrons higher than the bather capacity be allowed in the pool area. Bather capacity shall be calculated as follows:
1. In areas where the depth is less than five feet- allow 15 square feet of surface area per bather.
 2. In areas where the depth is greater than or equal to five feet- allow 20 square feet of surface area per bather.
 3. If diving boards or slides are present- exclude 300 square feet of surface area around each feature from bather capacity computations.
 4. In spas- allow 10 square feet of surface area per bather.

3-3. The pool and spa basin:

- A. All materials used in the pool or spa basin shall be nontoxic, durable, waterproof and easily cleanable. All equipment shall be NSF or UL listed and designed for and approved for use in a pool or spa facility.
- B. The bottom and sides of the pool or spa shall be a light color. Green is prohibited for use as a color for the pool or spa basin.
- C. Aluminum shall not be used as a pool or spa basin finish.
- D. The surface finish of the pool or spa basin, including any paint, shall be maintained in a sound, easily cleanable manner and shall be maintained so as not to be peeling, flaking or otherwise damaged.
- E. The sides and bottoms of pools and spas shall be smooth and free from cracks or open joints.
- F. Joints between the floors and walls shall have a cove radius of at least one inch and may not exceed more than 12 inches if the water depth is less than six feet.
- G. The edge of the pool at the junction with the deck shall be rounded to form a handhold.
- H. The bottom of the pool or spa shall slope to the main drain or the outlets.
- I. In pools less than 42 feet in length, the rate of slope of the floor in the shallow portion may not exceed one foot in eight feet where the water depth is less than five feet. In pools of greater than 42 feet in length, the rate of slope of the floor in the shallow portion of the pool may not be greater than one foot in 15 feet where the water depth is less than five feet. There may not be sudden changes in slope in this area. The bottom slope of the pool at depths greater than five and one-half feet may not be greater than one foot in three feet.
- J. A lifeline shall be provided at or within one foot of the break in grade between the shallow and deep portions of the pool, if the deep part of the pool exceeds five feet.
- K. The lifeline shall be at least three-quarters of an inch in diameter, securely fastened to the pool walls with a non-corrosive recessed connector, and marked with colored floats.
- L. The lifeline shall be in place at all times that the pool is open. If there are periods of time that are designated for lap swimming only, the lifeline may be removed so long as there are the required number of lifeguards present supervising the lap swimmers.
- M. Diving areas shall have adequate depth and clearance for safe diving. The minimum required depth for any area of the pool where a diving board is located shall be 12 feet. The diving area shall extend at least 16.5 feet straight out from the tip of the diving board. There shall not be any obstructions extending from the wall or the floor into the clear area of the diving portion of the pool. The diving area shall be designed to be in compliance with standards recognized by the Department (such as those of the United States Diving Association, Fédération Internationale de Natation (FINA), the Red Cross, the American National Standards Institute (ANSI), or the YMCA).
- N. Ladders or stairs shall be located at the shallow end and at both sides of the deep end of the pool and at intervals not to exceed 75 feet.
- O. Ladder and stair materials shall be nonabsorbent, non-corroding and easily cleanable.
- P. Ladders shall be securely mounted at both top and bottom ends.
- Q. The gap between the ladder and wall shall not be greater than six inches.
- R. All stairs entering a pool shall be recessed, except that stairs entering special purpose or therapy pools need not be recessed if UMDHU approves the design.
- S. Treads of stairs where used shall be of non-slip material and shall be marked with a continuous, permanent dark color. Stairs shall be plainly visible to persons both above and in the water.
- T. Step holes shall be of the recessed type and shall be self-draining into the pool and easily

- cleanable. Newly constructed pools shall not be equipped with step holes.
- U. Steps, ladders, or step holes shall have a sturdy and easily visible handrail on either side and at the top leading out over the walk area.
- V. Gutters and all related equipment shall be maintained in a whole sound condition.

3-4. The decking and associated features and depth markings:

- A. For public pools, all walks and deck areas shall completely encircle the pool, shall be at least eight feet wide, and shall be restricted to use of those attired for aquatic activities only. There shall be an area that is at least eight feet wide around all public pools that is kept free of any obstructions. A minimum width of four feet of walk area shall be provided for semi-public pools and shall extend entirely around the pool. There shall be an area that is at least four feet wide around all semi-public pools that is kept free of any obstructions.
- B. All walking areas and decks shall be constructed so as to be smooth, free of open cracks and/or broken areas, easily cleanable, of non-slip construction and comfortable to bare feet.
- C. Carpeting, floor matting or other porous materials that interfere with floor cleaning or provide a place for bacteria and fungi to multiply are prohibited in any area of the pool or spa facility that may regularly be exposed to water.
- D. All walks and decks of indoor pool and spa facilities shall be uniformly sloped to floor drains. Outdoor pool and spa facilities may not be required to have floor drains if any water is directed away from the pool or spa and to an area where it will not pool or accumulate. Walks and decks shall have a slope of about one-quarter inch to the foot either away from the pool or to a deck drain system.
- E. A spa shall be completely surrounded by a four-foot walkway. If the space is limited and the spa is no more than ten feet wide, a four-foot deck is required on at least two sides. A deck of at least 12 inches wide shall be maintained on the remaining sides. All elevated spas shall be equipped with guardrails.
- F. Spas maintained in the same areas as swimming pools shall be separated from the pool by at least 12 inches and shall be protected with a railing to prevent the use of the separation as a walkway unless the walkway is eight feet or greater in width.
- G. All pools and spas that are used at night shall have an artificial light system in the swimming pool or spa basin sufficient to permit easy identification of objects in the pool. All indoor pools and spas shall be equipped with an artificial light system sufficient to permit easy identification of objects in the pool.
- H. There shall be an absolute separation of any space used by spectators from any space used by bathers. There shall be no means by which the bathers can directly enter the space reserved for the spectators or vice versa. The spectator area shall have a separate entrance. Galleries for spectators shall not overhang any portion of the pool surface.
- I. Indoor pools and spas shall have adequate ventilation to remove excess moisture. Indoor pools and spas shall have heating and cooling equipment capable of keeping the temperature within the required range.
- J. Elevated diving boards for use by the general public may not be higher than ten feet above the water level.
- K. At least 16.5 feet of unobstructed clearance that extends at least eight feet behind, at least eight feet to each side of and at least 16.5 feet ahead of the center of the front tip of the board is required for any diving board. A minimum deck width of two feet shall be provided on the sides and rear of any piece of diving equipment.

- L. The depth of water in the pool shall be plainly marked at points of maximum and minimum depth, at the break between the deep and shallow areas, on both sides and ends of the pool and at intermediate depths spaced at not more than 25 foot intervals.
- M. The markers shall be placed on the pool wall so as to be visible above the surface of the water and on the horizontal surface of the deck.
- N. All depth markers shall be at least four inches in height and shall have the depth indicated on a background of a contrasting color.
- O. Depth markers on the pool decking shall be a non-slip type.

3-5. Bathhouses and dressing rooms/locker rooms:

- A. The bathhouse shall be located to provide entrance to the pool area near the shallow end of the pool only.
- B. Dressing rooms and locker rooms shall be provided with heating and cooling facilities that are capable of maintaining a constant temperature level of between 70 and 75 degrees Fahrenheit. If a bathhouse is at a facility that is open during a part of the year where the temperature is below 70 degrees, then it shall be provided with heating facilities capable of maintaining a constant temperature that is 70 degrees or warmer.
- C. There shall be a floor area of at least three and one-half square feet provided for each bather (based on the calculated bather load of the pool or spa) in the dressing room, locker room or bathhouse.
- D. Floors shall be of smooth, non-slip, and impervious construction and sloped to drains at one-quarter inch per foot. Floor drains shall be installed in all areas subject to water accumulation to prevent water accumulation.
- E. Dressing room booths and furnishings shall be of simple design and shall be constructed of non-absorbent and easily cleanable materials suitable for hose cleaning. Partitions in booths shall terminate at least six inches above the floor.
- F. Three-quarter inch hose bibs equipped with proper backflow prevention devices shall be provided for area cleanup.
- G. Bathhouse floors and surfaces shall be cleaned and sanitized at least daily, and more often as necessary to maintain them in a clean condition free of visible dirt and debris.
- H. Natural and/or artificial ventilation shall be provided that is sufficient to keep the bathhouse, dressing rooms or locker rooms free of excessive heat and humidity.
- I. A minimum lighting level of at least 50 foot-candles at floor level shall be provided during both day and night.
- J. A clothing storage area shall be provided.
- K. Hot and cold running water under pressure shall be provided at all showerheads and lavatories. Hot water shall be at least 100 degrees, but not more than 120 degrees. The water heater and all associated appurtenances shall be inaccessible to the bathers and shall be capable of supplying at least two gallons per minute (gpm) of 100-degree water to each showerhead.
- L. One showerhead shall be provided for each 40 swimmers expected at maximum pool load.
- M. Shower rooms shall be located adjacent to the dressing rooms and shall not be used as hallways between the dressing rooms and the pool or spa.
- N. Soap dispensers shall be provided for each lavatory.
- O. At least one lavatory shall be provided for every 60 bathers. Lavatory numbers shall be based on the maximum designed bather load for the pool or spa.
- P. At least one toilet and one urinal shall be provided for every 60 male bathers, and at least

one toilet shall be provided for every 40 female bathers. Toilet/urinal numbers shall be based on the maximum designed bather load for the pool or spa.

- Q. All swimming pools or spas shall be provided with separate male and female restrooms that are conveniently located for use by patrons of the pool or spa. All swimming pools or spas shall be provided with shower facilities that are conveniently located for use by bathers before they enter the swimming pool or spa.

3-6. Safety equipment, lifeguards, CPO:

- A. For all public (and semi-public pools of over two thousand square feet of surface area), one lifeguard shall be provided for each 2000 square feet of pool surface area or fraction thereof, or for every 25 swimmers, whichever is greater. If a pool requires more than one lifeguard, the lifeguards shall be positioned on opposite sides of the pool. Lifeguards are not required if the pool is less than 2000 square feet in water surface and is classified as semi-public.
- B. All lifeguards shall be certified by the Red Cross, YMCA or equivalent agency (approved by UMDHU).
- C. If a pool or spa facility meets the conditions which require lifeguards be present, then there shall be present at all times when the pool or spa is open an individual designated as being in charge of the lifeguards present. Also, all lifeguards at the facility shall be under the direct supervision of a head lifeguard. The head lifeguard shall meet all other requirements for lifeguards and shall be certified in CPR, first aid and blood borne pathogens.
- D. All swimming pool or spa facilities shall be under the direct supervision of a Certified Pool/Spa Operator (CPO as certified by the National Swimming Pool Foundation and renewed once every five years) or under the supervision of a person with a comparable certification (as approved by UMDHU). In order for an alternate certification to be considered, the person shall submit all course texts, handouts and other materials to UMDHU for review. If an alternate certification is deemed to be acceptable, the applicant will be notified in writing by UMDHU.
- E. Each swimming pool and spa facility shall have present at all times while open to public use a person that is in charge of pool operations. This person shall be familiar with procedures for water testing and shall be familiar with equipment operation and maintaining proper pH, water clarity, and free and total chlorine levels.
- F. At least one set of lifesaving equipment shall be provided consisting of:
1. One or more non-telescoping, non-conductive poles at least 16 feet long and having a Shepard's crook with an aperture of at least eighteen inches between the tip of the hook and the pole. A shorter pole may be used as long as the pole is at least one half the width of the pool plus two feet long.
 2. Two or more U. S. Coast Guard approved throwing rings having an outside diameter of 15 to 24 inches equipped with one-quarter to three-eighth inch line in a length not less than one and one-half times the width of the pool.
 3. A telephone. At the telephone, there shall be a legible list of emergency phone numbers and the physical address of the pool or spa facility.
 4. A first aid kit that meets OSHA requirements.
 5. If the pool or spa has diving boards or slides: at least one backboard with at least three tie down straps and a head immobilizer.
- G. The following signage is mandatory at all swimming pool and spa facilities:
1. All areas of the pool that are less than five feet in depth shall be marked with

- signs prohibiting diving. Also the deck shall be marked to indicate that diving is prohibited in these same areas. These signs and deck markings shall be spaced no farther apart than one every 25 feet.
2. If diving boards are present, a sign shall be displayed with diving board rules (Appendix H).
 3. A sign that clearly states pool or spa capacity and hours of use. The sign shall also state that pool or spa use during any other times is prohibited.
 4. A sign that requires swim diapers for infants or any other incontinent individuals.
 5. A sign that states that showering is mandatory for all individuals before pool or spa use. This sign shall be posted in clear view in the vicinity of the showers intended for use before bathers enter pool or spa.
 6. If a spa is present, a sign shall be displayed with spa rules (Appendix H).
 7. If a slide is present, a sign shall be present that requires users to slide in a feet forward position only.
 8. A sign stating is a swimmer has had diarrhea in the last 14 days they cannot use the pool or spa.
- H. If at any time, the electrical, water or sewer services to a pool or spa facility are interrupted, then the pool or spa shall be closed. The CPO shall notify UMDHU immediately. The pool or spa may not reopen without the permission of UMDHU.
- I. For outdoor pools: in the event of a thunderstorm, all swimmers shall be cleared from the pool and deck at the first sound of thunder. Bathers shall not be allowed back into the pool area until the threat of lightning has passed.
- J. The MSDS sheets for all chemicals used at the facility shall be kept in a clearly labeled binder on site. The MSDS sheets shall be alphabetized by chemical name. Sheets for chemicals that are no longer kept or used at the facility shall be removed.
- K. All chemicals used at the facility shall not be stored in any way that makes them accessible to patrons of the facility.
- L. All chemicals shall be stored in their original containers. Containers used to store working amounts of chemicals that are not the original container shall be a new clean container and shall be clearly labeled with the common name of the contents. Manufacturers' containers for chemicals shall not be reused for any purpose.
- M. Suction cleaners either of the portable type or as part of the permanent piping system are required. Suction cleaners that are run directly off the influent side of the pump are prohibited.
- N. Any employee of a pool or spa facility who is diagnosed with, or who tests positive for any illness that is transmissible through water shall notify their supervisor immediately, and shall be excluded from any activities at the pool or spa facility that would bring them into contact with pool or spa water or basin surfaces. The employee shall be excluded until permission is granted by UMDHU for the exclusion to be lifted.
- O. Any owner or operator of any pool or spa facility at which an employee has been diagnosed for or tested positive for any illness that is transmissible through water shall notify UMDHU immediately. If the owner or operator is not sure whether or not an illness is transmissible by water, then they shall report the illness to UMDHU. Also the owner or operator of any pool or spa facility at which a patron reports the possibility of contracting illness at that facility shall notify UMDHU immediately. If a person with an illness that is transmissible through water is knowingly allowed to perform any activities that could potentially result in the spread of illness, then the license for that pool or spa

facility will be suspended or revoked.

- P. Any employee of a pool or spa facility shall notify their supervisor immediately if they have any of the following symptoms: diarrhea, vomiting or jaundice. The supervisor shall then exclude the employee from any activities that would bring the employee into contact with pool or spa water or basin surfaces. The exclusion shall remain in place until permission is granted by UMDHU for the exclusion to be lifted.

3-7. Circulation, chemical feeding and filtration:

- A. All pools and spas shall have a circulation system that consists of a filter system, disinfection system, piping, valving, a controller and any other necessary appurtenances for moving, treating, heating, etc of pool and spa water. Every pool and spa shall have a circulation system that is specific to that pool and spa, and shall not share any part of a circulation system with any other pool or spa.
- B. All pools and spas shall have a filter system. The filter shall be one of three types: sand, diatomaceous earth (DE) or cartridge. Other filter types will be considered on a case-by-case basis and may be acceptable, provided that they are approved by UMDHU.
- C. The filtration media must be able to maintain water clarity below one-half NTU.
- D. All filters shall comply in all respects with the standards of the National Sanitation Foundation covering filters (except as noted). All filtration media shall be replaced at a frequency not to exceed the manufacturers' recommendations.
- E. High rate sand filters shall be sized to operate at filter media rates no greater than 15 gallons per minute per square foot of surface area. Rapid rate sand filtration systems shall be sized to operate at filter media rates no greater than three gallons per minute per square foot of surface area. Cartridge filtration shall be sized to operate at filter media rates no greater than .187 gallons per minute per square foot of surface area. DE filtration systems shall be sized to operate at filter media rates no greater than two and one-half gallons per minute per square foot of surface area.
- F. Pressure sand filter systems shall be provided with the following:
 - 1. Pressure gauges on each individual tank or node on the inlet and outlet pipes to determine loss of head in the filter medium.
 - 2. An air release with a manual control on the highest point of each filter.
 - 3. A readily removable head or manhole with sufficient working space to facilitate inspection and repair.
 - 4. A sight glass installed on the waste discharge line so the operator may watch the progress of filter washing.
 - 5. Freeboard of at least one-half the depth of the sand and not less than 18 inches between the surface of the filter material and the overflow troughs.
 - 6. Filter piping arrangement should be as simple as possible to accomplish filtration, backwashing, and filter to waste.
- G. The following special requirements shall be satisfied in diatomaceous earth filtration:
 - 1. Slurry feeding equipment is required when exceeding a filter media rate of one and one-half gallons per minute per square feet of filter area.
 - 2. Pressure gauges installed on both the influent and effluent side of each filter for pressure DE filter system.
 - 3. A vacuum DE system shall have a vacuum gauge for each set of grids.
 - 4. The filter piping shall be installed with a recirculating precoat line to permit recirculation of the water from the effluent side of the filter back to the influent side until a satisfactory clear filter effluent is produced prior to admitting

- the water into the pool.
5. All DE systems shall be equipped with a separation tank to collect used DE. This separation tank shall be equipped with a manual means to release air pressure. The collected DE shall be disposed of in an approved manner.
- H. If cartridge filtration is used, at least one extra, complete set of cartridges shall be provided.
- I. Pressure gauges are required on cartridge filter systems on the influent lines. Cartridges shall be cleaned or replaced when the influent pressure increases to 10 psi above the cycle starting pressure.
- J. All portions of the potable water supply serving the pool and auxiliary facilities shall be protected against backflow. Potable water introduced into the pool, either directly or through the recirculation system, shall be supplied through an air gap, an approved-type backflow prevention device, or other approved means.
- K. All piping and plumbing shall be installed in compliance with the requirements of the North Dakota State Plumbing Code.
- L. Each pool or spa shall be equipped in such a way so as to minimize the chance of any type of entrapment of bathers.
1. All vacuum outlet covers shall be in place at all times while the pool or spa is operating. If any covers are missing, the pool or spa shall be closed until the covers are replaced.
 2. Anti-entrapment covers shall be used on all suction outlet locations. All covers shall comply with ASME/A112.19.8M “Suction Fittings for Use in Swimming Pools and Wading Pools, Spas, Hot Tubs and Whirlpool Bathtub Appliances”. Documentation shall be maintained on site that all covers comply with this standard. These covers shall not be removable without the use of tools.
 3. If at any time any of these covers are missing or damaged, the pool or spa shall be closed until the cover is replaced.
 4. The covers used shall be marked with the manufacturers’ maximum flow rating to prevent entrapment. The covers used shall have a maximum flow rating compatible with the flow rate of the pool or spa that is necessary to achieve the required turnover rate. The maximum flow rate of the cover shall be such that it is not exceeded even if 100 percent of the circulation system design flow is drawn through that single cover. These markings shall be available to UMDHU at all times for review.
 5. The main drain line shall be connected to a minimum of two suction outlets that are not isolated by valves or other means and that are spaced at least three feet from edge to edge or on separate planes, like the floor and a wall. Alternately, the main drain may be a trough or channel drain system that spreads the suction openings across a sufficiently large area that it would not be possible for a bather to seal off. Alternately, a surface venting system or gravity flow system may be used to remove direct suction. Alternately, a safety vacuum relief system may be used to turn off the pump or act as a vacuum breaker.
 6. All newly constructed pools shall be equipped with collection or balance tanks to isolate the pool from direct suction from the pump. Direct suction from the pump is prohibited.
- M. The following are the minimum required turnover times for pools and spas:
1. Swimming pools- one and one-half times the depth in feet to equal the turnover-time in hours and not to exceed six hours total

2. Spas- 30 minutes
 3. Wading pools- two hours
 4. Interactive water fountains- 30 minutes
 5. Water parks- two hours
 6. Training pools- two hours
- N. There shall be a rate of flow gauge installed on the return flow line downstream of all equipment. This gauge shall be functional and easily visible. The rate of flow gauge shall have a range that is at least one and one-half times the designed flow rate and shall be calibrated to read in gallons per minute. The rate of flow gauge shall at least be accurate to +/-10 percent of the actual rate of flow. The rate of flow required to achieve the minimum turnover time for a pool or spa shall be established and documented in the records at the pool and spa facility. The rate of flow shall be read off of the rate of flow gauge at least weekly and recorded in the daily record. If the rate of flow falls below that rate necessary to achieve the minimum turnover time, then that pool or spa shall be closed until the required turnover time can be achieved.
- O. Peristaltic pumps shall not be mounted above any chemicals or above any other piece of equipment.
- P. A hair and lint catcher of acceptable design shall be provided on all recirculation systems except where the filter is located prior to the pump suction.
- Q. The circulation system shall be set up so that no more than 25 percent of the water entering the system is drawn from the main drain and so that at least 75 percent of the water is drawn from the surface of the pool or spa.
- R. Perimeter overflow gutters alone shall not be used as the sole means of surface water return to the circulation system.
- S. There shall be at least one skimmer for each 400 square feet of surface area or fraction thereof.
- T. A vacuum gauge shall be installed on the influent line immediately prior to the pump. Base limits for vacuum shall be established when the pool or spa is installed. Base and upper limits shall be posted in the pump or mechanical room. This vacuum gauge shall be read at least weekly and the value recorded in the daily record.
- U. A hydrostatic relief valve should be installed in all pools to prevent pool damage from high ground water levels.
- V. The water velocity in discharge piping shall not exceed 10 feet per second. The water velocity shall not exceed six feet per second in suction piping. The water velocity shall not exceed one and one-half feet per second through suction grates.
- W. All piping shall conform to ANSI/NSFI Standard 14 "Plastics, Piping Components and Related Materials".
- X. Piping that is exposed to freezing temperatures shall be uniformly sloped in one direction and shall be valved to facilitate drainage.
- Y. All piping, valves and other appurtenances of the circulation system shall be clearly labeled to indicate contents and function.
- Z. If used, a water heater shall be installed downstream from the filter and shall have a check valve in place between the heater and filter to prevent heated water from passing into the filter. If there are chemical feeders downstream of the heater, there shall be a check valve in place between any feeders and the heater.
- AA. All liquid chemicals shall be added by means of a positive displacement pump located downstream from the filters or heater. Erosion feeders shall be operated in a manner that is in full compliance with the manufacturers labeling, and shall be installed downstream

from the filter and heater. All newly constructed pools shall have a flow meter installed at each erosion feeder to ensure that proper flow is maintained. Pressure to vacuum feeders are prohibited. Solution pots are prohibited.

3-8. Disinfection:

- A. All public and semi-public pools and spas shall be equipped with automatic monitoring and chemical feeding equipment. At a minimum, this equipment shall continuously monitor the efficacy of the disinfection residual and be able to add disinfectant as needed; and shall continuously monitor the pH and be able to add necessary chemicals to maintain the pH in the desired range.
- B. Equipment shall be provided to adequately disinfect the pool or spa. The disinfection equipment shall operate 24 hours per day at all times during the pool or spas season of operation.
- C. Chlorine and bromine are approved for use as disinfectants.
- D. Stabilized chlorines (such as sodium dichloro-s-triazinetrione or trichloro-s-triazinetrione) shall not be used as a disinfectant in indoor swimming pools or spas. Cyanuric acid that is not part of a stabilized chlorine compound may not be used for any purpose at any pool or spa facility.
- E. Ozone shall not be used at any pool or spa facility.
- F. Polyhexamethylene Biguanide (PHMB) shall not be used at any pool or spa facility.
- G. Chlorine dioxide shall not be used at any pool or spa facility.
- H. Gas Chlorine and carbon dioxide gas:
 - 1. Chlorine gas shall be supplied by means of a cylinder-mounted vacuum operated gas chlorinator of the fail-safe type. Automatic switching tanks and/or metered valves may be used.
 - 2. All swimming pool operators that handle chlorine gas shall meet all current and future certifications required for the safe handling of chlorine gas.
 - 3. Gas chlorine cylinders and all appurtenances shall be stored in a room that is reasonably gas tight, shall have interior surfaces that are reasonably corrosion resistant and shall be located at ground level. This room shall be clearly labeled as to the presence of chlorine gas inside.
 - 4. The chlorine room shall be mechanically vented to the outside of the building, and not into the pool area. The ventilation system shall be forced air and shall be capable of one complete air exchange per minute.
 - 5. The fan for the chlorine room shall have an intake that is located within six inches of floor level.
 - 6. The switch for the fan shall be located outside the chlorine room.
 - 7. The chlorine room shall be equipped with a system to allow fresh make up air to enter the room as the room is ventilated. This system shall be located so as to be as close to the top of the room as possible.
 - 8. The door to the chlorine room shall open to the outside of the building and not into the pool area.
 - 9. The door to the chlorine room shall be equipped with a clear glass window that allows inspection of the chlorinator, cylinders and general room before entry.
 - 10. The chlorine room shall be equipped with an artificial light system that is sufficiently bright so as to allow all equipment to be seen clearly for inspection before entry into the room. The switch for the light shall be located outside the chlorine room.

11. A gas mask approved by the National Institute of Occupational Safety and Health (NIOSH) for protection against chlorine gas shall be provided and shall be stored outside the chlorine room. The filters for the gas mask shall be replaced in intervals no greater than those recommended by the manufacturer. A record shall be kept of gas mask usage to insure that the mask will be serviceable when needed.
 12. An approved ammonia bottle shall be kept in the chlorine room and used to test for leaks. No chemicals other than gas chlorine in cylinders and the ammonia bottle shall be kept in the chlorine room.
 13. A scale shall be provided for weighing chlorine cylinders to keep track of chlorine usage. Any facility that uses gas chlorine shall have a detailed record of the exact amount of gas chlorine used each day.
 14. All compressed gas cylinders shall be capped when not in active use and shall be chained or secured so as not to be able to fall over.
 15. A cylinder wrench for turning off the cylinder shall be attached to the top of each chlorine cylinder.
 16. Carbon dioxide may only be used if under the control of an automated feeder control system.
 17. Carbon dioxide cylinders may be used or stored only in a room that has forced ventilation.
- I. Chlorine generation:
1. All chlorine generators shall be operated in full compliance with the manufacturers' recommendations.
 2. All instructions shall be kept on site and available for review.
 3. Salt concentrations shall be maintained at the level required by the manufacturer. Proper testing equipment shall be kept on site for testing salt concentrations.
 4. Proper ventilation shall be provided to prevent the accumulation of hydrogen gas.
- J. UV light sanitization:
1. UV light may be used for sanitization of pool and spa water. Chlorine or bromine shall still be used as an oxidizer and to provide a residual sanitizer concentration. If a UV light system is used, the operator shall maintain an oxidation-reduction potential (ORP) of at least 750mv. If such potential is maintained at a free chlorine level below the minimum level required in this code, then the pool or spa may submit a request for a variance to maintain a lower free chlorine level.
 2. In a UV light system, only UV-C wavelength light produced by an approved system shall be used.
 3. If a UV light system is used, the chlorine feed shall be downstream of the UV light system.
 4. The UV bulb shall be changed at least as often as recommended by the manufacturer. If a time range is given for life expectancy on a bulb, the bulb shall be changed after the shortest recommended period of time has elapsed.
 5. The UV light system shall be sized so that it provides sanitization as designed at a rate of flow that is consistent with the required turnover time for the pool or spa.
 6. A UV light system shall be operated 24 hours a day during the entire season of operation of the pool or spa.
 7. A UV light system shall have some means of providing instant and

unambiguous warning in the event of a bulb failure. If a bulb fails, the pool or spa shall be closed until the bulb has been replaced and until at least four turnovers of the pool or spa water have occurred.

8. A UV light system shall be NSF approved and shall be operated in a manner that maintains that approval.

3-9. Operational practices:

- A. The recirculation system shall be operated continually 24 hours per day during the normal season of operation.
- B. A pH value between 7.2 and 7.8 shall be maintained at all times while a pool or spa is open for use. If the pH value falls outside this range, the pool or spa shall immediately be closed until the pH can be brought within this range.
- C. If the free chlorine level of a pool or spa falls below one mg/L, the pool or spa shall be closed until the level can be raised to the level required for that pool or spa.
- D. If the total chlorine level is above 10 mg/L, then the pool or spa shall be closed until the level can be decreased to the level required for that pool or spa.
- E. If a compound or process other than chlorine is used for disinfection, and the residual maintained falls below a level that is equivalent to the effectiveness of one mg/L of free chlorine, then that pool or spa shall be closed until the level can be raised to the level required for that pool or spa.
- F. A free chlorine residual of between two to four mg/L shall be maintained for all pools that use chlorine for disinfection.
- G. Free chlorine equivalent residuals of three to five mg/L shall be maintained in all spas.
- H. If a pool or spa uses a disinfection method other than chlorine, the method shall provide a disinfection level equal to that provided chlorine. Any disinfection method other than chlorine that is used must provide residual disinfection that is at least equal to that provided by chlorine. If the disinfection method used does not provide a disinfection residual, then an approved means of obtaining the required free chlorine residual shall be provided.
- I. Every pool and spa shall be provided with approved testing equipment for determination of disinfection residuals and pH concentration. The disinfection residual testing equipment shall have a range that encompasses the minimum effective level and the maximum safe level of the agent used for disinfection.
- J. The testing equipment shall be stored in such a way so as to protect it from inappropriate moisture and from extremes in temperature. The test kit must be stored and maintained under conditions as specified by the manufacturer.
- K. If more than one disinfection agent is used, the pool shall be provided with the proper testing equipment for all disinfection agents used.
- L. When chlorine is used as the disinfection agent, the testing equipment shall have a minimum detection range of between zero and five mg/L free chlorine. The test equipment shall also have the ability to test for total chlorine in the same range.
- M. The test equipment shall be capable of giving chlorine residual readings in increments that are no larger than one-half mg/L.
- N. The hydrogen ion tester shall have a pH range of from 6.8 to 8.4 in increments that are not greater than 0.2.
- O. The test kit shall also have proper reagents for testing calcium hardness, alkalinity and cyanuric acid (if used with or as part of the disinfection medium).
- P. Reagents in test kits shall be replaced every six months or at the beginning of operations for the year, whichever requirement is greater. Test strips or sticks are not considered

- suitable for use in, or in place of, a test kit.
- Q. If chlorine is used as a disinfection medium, and if the test kit does not have provisions for determining the exact quantity of total chlorine present, then a supplemental test shall be included in the test kit to provide chlorine level measurements at levels higher than can be tested with the regular test kit.
 - R. Combined chlorine levels shall be no more than one-half mg/L for all pools. Achieve break point chlorination as soon as possible when combined chlorine levels are greater than one-half mg/L (Appendix A).
 - S. Swimming pools or spas that use stabilized chlorine for disinfection shall maintain cyanuric acid levels below 50 mg/L. If cyanuric acid levels rise above 100 mg/L, then the pool or spa shall be closed until the cyanuric acid level is brought below 50 mg/L.
 - T. If stabilized chlorine is used, the cyanuric acid levels of pool and spa water shall be checked at least daily and the levels recorded in the daily log.
 - U. In the event that a pool or spa is contaminated with fecal matter, it shall be immediately closed to bathers. Disinfection procedures found in Appendix F shall be followed before the pool or spa is re-opened.
 - V. Infants and bathers requiring diapers shall use approved swim diapers.
 - W. Bathers having any communicable infection shall not be permitted to use the pool.
 - X. Pool rules shall be posted in an easily viewed location in the pool area.
 - Y. The pool, spa, and all related facilities shall be maintained in a clean manner at all times. All surfaces shall be kept free of pooled, standing water.
 - Z. Pool and spa surfaces shall be kept free of film and floating dirt and pool and spa bottoms shall be kept free of sediment.
 - AA. The decking shall be sanitized daily with an approved sanitizer.
 - BB. All patrons shall be required to take a cleansing shower before entering the pool or spa.
 - CC. A daily record or log shall be kept for each body of water at a swimming pool or spa facility. The daily record shall include any chemical additions done; any fecal, vomit or blood contamination incidents; any injuries or reports of recreational water illness (RWI) or chemical exposures; all results of any water chemistry tests that are done; any other unusual occurrences; and bathing load.
 - DD. Before any bathers are allowed to enter the pool or spa at the beginning of each day's operations, the following water chemistry items need to be tested: free chlorine, combined chlorine, pH, and cyanuric acid (if applicable).
 - EE. The free and combined chlorine levels and the pH level shall be tested and recorded at least three times daily. Testing shall be performed at intervals not less than one hour apart and not greater than two hours apart.
 - FF. The daily record and the results of any and all microbiological tests shall be kept on hand for at least three years. These records shall be available for review by UMDHU.
 - GG. All swimming pools and spas shall be superchlorinated to a level that is at least 10 mg/L higher than the normal operational chlorine range for at least six hours prior to seasonal startup. Superchlorination to a level at least 10 mg/L higher than the normal operational chlorine range shall be done as needed for algae control, disinfection or chemical balance purposes. No bathers may be present in a pool or spa during any part of a process of superchlorinating a pool or during the process of shocking a pool using any non-chlorine shock method.
 - HH. Water in a pool or spa shall be of sufficient clarity so that the main drain or a standard test disc placed in the deepest area of a pool is readily visible from the deck. If at any time, the pool or spa water exceeds one-half NTU, then the pool or spa shall be closed

until the water is below one-half NTU. If the main drain or test disk is not visible, then the pool or spa shall be closed until such time as proper water clarity can be achieved and maintained.

- II. Swimming pools and spas shall have a thermometer located in the basin for monitoring water temperature.
- JJ. An indoor pool facility shall maintain the following indoor conditions:
 - 1. A relative humidity of 30 to 60 percent shall be maintained at all times while the pool or spa is open.
 - 2. Artificial illumination shall be designed to maintain a minimum 100 foot-candles of illumination at deck level.
 - 3. Pool rooms shall be maintained at a constant temperature level of 75 to 82 degrees Fahrenheit.
- KK. Skimmer baskets shall be emptied at least daily.
- LL. Swimming shall not be permitted when the water temperature falls below 65 degrees Fahrenheit or when the water temperature exceeds 90 degrees Fahrenheit. Water temperatures of whirlpools or health pools shall not exceed 104 degrees Fahrenheit.

3-10. Interactive water fountains:

- A. The filtration pump and attraction pumps shall be on separate plumbing systems.
- B. The reservoir and plumbing capacity shall be at least 4,000 gallons.
- C. The filtration system shall have a turnover rate of not more than 30 minutes.
- D. The splash zone shall be properly sloped so as to prevent accumulated standing water.
- E. Only water from the water sprays, dancing water jets, waterfalls, dumping buckets, water cannons or any other such feature of the fountain shall flow into the reservoir.
- F. If water recreation attractions including water slides, wave pools, rapid rides, lazy rivers and other similar features need to differ from the requirements of this Code with respect to pool profile, depth, flow dynamics, surface skimming systems, or any other aspect, the designing engineer or equipment manufacturer shall provide UMDHU with information to justify such deviation as necessary for the proper function of the attraction. If it can be demonstrated to UMDHU's satisfaction that such differences will not affect the health or safety of patrons, UMDHU may grant a variance to allow those differences.
- G. The filter circulation system shall draw water from the reservoir both through a variable height surface skimmer and a bottom drain located no more than 6 inches from the bottom of the reservoir.
- H. Access to the reservoir shall be provided to accommodate equipment repair and to facilitate a visual inspection.
- I. Reasonable provisions shall be taken to exclude animals from the splash zone.

Section 4: Fire Safety Requirements

All swimming pool and spa facilities in the UMDHU coverage area shall be constructed in compliance with and operated in compliance with the legally adopted fire code for the state of North Dakota as well as with the legally adopted building code for the state of North Dakota. In the event that any item contained in this code is different from either the fire code or building code, then the stricter standard shall be enforced. All battery-operated smoke detectors shall be tested at least monthly, and the results along with the initials of the person performing the test shall be recorded in a log. This log shall be kept for at least three years.

Section 5: Separation

If any part of this code is found to be or held invalid that invalidity shall not affect any of the other parts of this code.

Section 6: Penalty

A person may be charged with a misdemeanor under Section 23-35-13 of the North Dakota Century Code (NDCC) if they:

1. Violate this ordinance
2. Permit a violation to exist on the premises under their control.
3. Fail to take action to abate the existence of the violation(s) of this code within a specified time period when notified to do so by UMDHU.

Violations of this code may also be prosecuted under 23-09-19 of the NDCC.

APPENDIX A

BREAKPOINT CHLORINATION

STEP 1: TOTAL CHLORINE – FREE CHLORINE = COMBINED CHLORINE

STEP 2: COMBINED CHLORINE X 10 = AMOUNT NEEDED TO REACH
BREAKPOINT

STEP 3: USE THE FORMULA:

Amount of chemical Your pool volume (gallons) Desired change Total
(See Appendix D)
/ 10,000 =
(amnt) x x (ppm) = Amnt

Go to appendix D and find the type of chemical that you are using. From the chart, get the number used to treat 10,000 gallons of water. Enter this number in the spot for amount of chemical.

Divide the total number of gallons of your pool by 10,000. This number goes in the spot for your pool volume.

Multiply the combined chlorine number times 10. This number goes into the spot for desired change.

Multiply the numbers you got for amount of chemical times your pool volume times desired change to get the amount of chemical that you need to add to your pool to achieve breakpoint chlorination.

APPENDIX B

LANGELIER SATURATION INDEX

TEMP (F) FACTOR CA HARDNESS FACTOR ALKALINITY FACTOR

32	.1	5 PPM	.3	5 PPM	.7
37	.1	25 PPM	1.0	25 PPM	1.4
46	.2	50 PPM	1.3	50 PPM	1.7
53	.3	75 PPM	1.5	75 PPM	1.9
60	.4	100 PPM	1.6	100 PPM	2.0
66	.5	125 PPM	1.7	125 PPM	2.1
76	.6	150 PPM	1.8	150 PPM	2.2
84	.7	200 PPM	1.9	200 PPM	2.3
94	.8	250 PPM	2.0	250 PPM	2.4
105	.9	300 PPM	2.1	300 PPM	2.5
128	1.0	400 PPM	2.2	400 PPM	2.6
800 PPM	2.5	800 PPM	2.9		
1000 PPM	2.6	1000 PPM	3.0		

$\text{pH} + \text{temp F factor} + \text{Ca hardness factor} + \text{alkalinity factor} - 12.1 = \text{saturation index}$

1. Find the temp of your pool under the column above. The factor number from the chart is the number you will use in the formula. If your temp is between two of the numbers on the chart, use the factor for the temp that your temp is closest to.
2. Find the Ca hardness in ppm of your pool on the chart above. The factor number from the chart is the number you will use in the formula. If your Ca hardness is between two values on the chart, use the factor for the closest value.
3. Find the total alkalinity of your pool on the chart above. The factor number from the chart is the number that you will use in the formula. If your total alkalinity is between two values on the chart, use the factor for the closest value.
4. If the saturation index number you get from the formula above is between + .5 and - .5 then your pool has balanced water.
5. If the saturation index number you get from the formula above is greater than + .5, then your pool water will likely cause scale formation.
6. If the saturation index number you get from the formula above is less than - .5, then your pool water is corrosive.

APPENDIX C

WATER BALANCE RANGES

TOTAL ALKALINITY: a measure of resistance to change in pH

Acceptable range: 60-150 ppm

Ideal range: 80-120 ppm

If using calcium hypochlorite, sodium hypochlorite or lithium hypochlorite- alkalinity should be 80-100ppm

If using gas chlorine, dichlor or trichlor- alkalinity should be 100-120 ppm

pH: a measure of acidity

Acceptable range: 7.2-7.8

Ideal range: 7.4-7.6

CALCIUM HARDNESS: a measure of calcium ions in water

Acceptable range: 150-1000 ppm

Ideal range: 200-400 ppm

TEMPERATURE:

Pools: Competition: 78-80

Recreation: 82-84

Special Populations: 86-88

Spas: Not to exceed 105

TOTAL DISSOLVED SOLIDS: a measure of all minerals dissolved in the water.

Not adjustable, other than by draining off water and adding fresh water.

APPENDIX D

AMOUNT OF CHEMICAL NEEDED TO TREAT 10,000 GALLONS OF WATER

TO INCREASE FREE AVAILABLE CHLORINE 1 PPM:

Chlorine gas 1.3 oz
Calcium hypochlorite 2 oz
Sodium hypochlorite 13 fl oz
Lithium hypochlorite 10.5 oz
Dichlor 2.5 oz
Trichlor 1.5 oz

TO INCREASE TOTAL ALKALINITY 10 PPM:

Sodium bicarbonate 1.5 lbs

TO DECREASE TOTAL ALKALINITY 10 PPM:

Muriatic acid 21.12 fl oz (2/3 qt)
Dry acid (sodium bisulfate) 1.5 lbs

TO INCREASE pH FROM 7.2-7.4:

Soda ash 6 oz

TO DECREASE pH FROM 7.8-7.6:

Muriatic acid 12 fl oz

TO INCREASE CALCIUM HARDNESS 10 PPM:

Calcium chloride (100%) 1 lb
Calcium chloride (77%) 1.25 lb

TO NEUTRALIZE 1 PPM OF FREE AVAILABLE CHLORINE:

Sodium thiosulfate 1 oz
Sodium sulfate 3.25 oz

APPENDIX E

CHEMICAL CALCULATIONS

Amount of chemical Pool Volume Desired Change Total
(Appendix D)
(gallons) ppm
/ 10,000 gallons / ppm from D
(amnt) x x =

1. Determine what you are trying to do. Find the appropriate chemical for the task in appendix D. Enter the amount given to treat 10,000 gallons from appendix D in the blank for amount of chemical.
2. Take your pool volume in gallons and divide that number by 10,000. Enter the result in the blank for pool volume.
3. Determine the amount of change you need to make by subtracting the value from your pool from the ideal value from appendix C. Take this number and divide it by the amount of change given in appendix D (example: chlorine changes- this number is one, for alkalinity and calcium hardness- this number is 10). Enter this final number in the blank for desired change.
4. Take the number in amount of chemical times the number in pool volume times the number in desired change. The final number is the amount of chemical that you need to add to your pool.

APPENDIX F

FECAL CONTAMINATION PROCEDURES

Formed stool (solid, non-liquid); (also vomit, blood)

1. Evacuate all bathers from pool or spa. Do not allow anyone to enter contaminated pools until decontamination procedures are complete.
2. Remove as much fecal material as possible using a net or scoop. Vacuuming fecal material is not recommended.
3. Raise free available chlorine level to 10 mg/L for at least 30 minutes.
4. Document the incident in the daily records.
5. Do not allow bathers back into the pool or spa until the free chlorine residual is between 2-3 mg/L (if necessary, sodium thiosulfate may be used to reduce the free chlorine residual, see Appendix D).

Diarrhea (liquid stool)

1. Same as 1 for solid stool.
2. Same as 2 for solid stool.
3. Raise free available chlorine to 20.0 mg/L and maintain this level for 13 hours.
4. Backwash the filter thoroughly. Discharge the effluent directly to waste. Where appropriate replace the filter media.
5. Document the incident in the daily records.
6. Do not allow bathers back into the pool or spa until the free chlorine residual is between 2-3 mg/L (if necessary, sodium thiosulfate may be used to reduce the free chlorine residual, see Appendix D).

APPENDIX G

BODY FLUID CONTAMINATION PROCEDURES (FROM THE CDC)

Blood, Vomit, Fecal Material

1. Block off area from pool patrons.
2. Wear disposable gloves (vinyl, nitrile, etc) to prevent contamination of hands.
3. Wipe up spill using paper towels or absorbent material and place into garbage bag.
4. Disinfect all affected area with a solution of 1 part bleach to 9 parts cool water. Mix up fresh solution for each event.
5. Allow bleach solution to remain on affected area for 20 minutes.
6. Wipe up the remaining solution.
7. Use same bleach solution to sanitize any non-disposable items used in cleanup.
8. Remove gloves and place in garbage bags with other contaminated items.
9. Wash hands with soap and water.
10. Document incident in daily records.

APPENDIX H

MODEL DIVING BOARD RULES:

1. USE THE DIVING BOARD ONLY UNDER THE DIRECT SUPERVISION OF A COACH OR LIFEGUARD.
2. DIVE OR JUMP ONLY IN A STRAIGHT LINE FROM THE END OF THE EQUIPMENT.
3. SWIM TO THE CLOSEST POOL EXIT OR WALL IMMEDIATELY AFTER COMPLETION OF THE DIVE.
4. LOOK BEFORE DIVING TO ENSURE THAT THE AREA IS CLEAR.
5. ONLY ONE PERSON ON THE DIVING BOARD AT A TIME.
6. NO MULTIPLE BOUNCES ALLOWED.
7. THE LADDER IS THE ONLY MEANS ALLOWED FOR MOUNTING THE EQUIPMENT.

MODEL SPA WARNING SIGN:

1. ELDERLY PERSONS, AND THOSE SUFFERING FROM HEART DISEASE, DIABETES, HIGH OR LOW BLOOD PRESSURE ARE PROHIBITED FROM USING THIS SPA.
2. UNSUPERVISED USE BY CHILDREN IS PROHIBITED.
3. DO NOT USE SPA WHILE UNDER THE INFLUENCE OF ALCOHOL, ANTICOAGULANTS, ANTIHISTAMINES, VASOCONSTRICTORS, VASODILATORS, STIMULANTS, HYPNOTICS, NARCOTICS OR TRANQUILIZERS.
4. DO NOT USE ALONE.
5. DO NOT USE FOR LONGER THAN 15 MINUTES AT A TIME.

MODEL POOL RULES:

1. NO FOOD, DRUGS OR ALCOHOLIC BEVERAGES ALLOWED.
2. NO GLASS CONTAINERS.
3. NO DIVING OR JUMPING FROM DECK INTO DIVING AREA (IF DIVING BOARDS PRESENT).
4. DIVING ALLOWED ONLY IN DESIGNATED AREAS.
5. NO HORSEPLAY, RUNNING, SHOVING, OR DUNKING.
6. NO ELECTRICAL APPLIANCES ALLOWED.
7. NO SWIMMING IF YOU HAVE ANY COMMUNICABLE ILLNESS, DIARRHEA (in the last 14 days), VOMITING, NASAL OR ORAL DISCHARGES OR SKIN RASHES.
8. ALL BATHERS MUST SHOWER BEFORE ENTERING POOL.
9. SWIM DIAPERS REQUIRED FOR ALL CHILDREN THAT ARE NOT POTTY TRAINED AND FOR ANY OTHER INDIVIDUALS THAT MAY BE INCONTINENT.
10. ENCOURAGE CHILDREN TO TAKE REGULAR BATHROOM BREAKS.
11. NO CHANGING DIAPERS IN POOL AREA.

APPENDIX I

GUIDELINES FOR POOL CLOSURE:

It should be understood that pool closure is not solely the responsibility of the regulatory authority. Pool operators need to be aware of an unsafe environment and take necessary measures to ensure swimmer safety. It is more appropriate for the pool operator to close the pool themselves (and inform the Upper Missouri District Health Unit) than for the health inspector to receive a complaint or find serious violations during a routine inspection. Pool closure is required if:

1. There is no circulation or filtration.
2. There is insufficient/excessive disinfectant or the pool fails to meet other chemical standards.
3. Water clarity is lacking and the pool bottom is not visible from the pool deck.
4. The bottom drain plate/grate is not in place, secure, or is broken.
5. An unsafe condition is present, such as a broken/exposed electrical pool light, fecal release in the water, or a temporary chlorine leak.
6. Water temperature is over 104°F
7. If the bacteriological sample is unsatisfactory.

QUESTIONS?

Feel free to call the Environmental Health Practitioner with your questions.

**Upper Missouri District Health Unit
110 West Broadway, Suite 101
Williston, ND 58801
(701) 774-6400
(toll free) 877-572-3763**