

Basic Math Skills Test (Imperial)

This basic math skills test is design to help you test your basic math knowledge that you will be required to perform as a certified operator. This is also your chance to make sure that you are familiar with using a calculator. Complete this test before you move on to the next section. The answers to these basic math questions are found on the next page but try not to look until you have completed all the questions. Your PHTA instructor may ask to see your answers to these questions at the beginning of your CPOSM certification course. Simply circle your answer choice.

1. **Add:** $2.32 + 71.4 + 0.003 =$

- (a) 73.75
- (b) 94.9
- (c) 9.49
- (d) 73.723

2. **Add:** $7.4 + 0.7 + 1.7 + 1.9 =$

- (a) 11.5
- (b) 11.7
- (c) 12.1
- (d) 11.9

3. **Subtract:** $7,527 - 149 =$

- (a) 7,378
- (b) 7,478
- (c) 7,388
- (d) 7,488

4. **Subtract:** $11.7 - 12.1 =$

- (a) +0.4
- (b) +1.1
- (c) -0.4
- (d) +0.4

5. **Add and Subtract:** $7.2 + 0.9 + 1.8 + 1.6 - 12.2 =$

- (a) +0.7
- (b) +23.7
- (c) -1.7
- (d) -0.7

6. **Multiply:** $300 \times 7.48 =$

- (a) 2,144
- (b) 2,244
- (c) 40.106
- (d) 292.52

7. **Multiply:** $25 \times 75 =$

- (a) 1875
- (b) 2875
- (c) 18,750
- (d) 187.5

8. **Divide:** $200,000 \div 10,000 =$

- (a) 2000
- (b) 200
- (c) 20
- (d) 40

9. **Divide:** $75,000 \div 10,000 =$

- (a) 7.5
- (b) 7.0
- (c) 75
- (d) 10

10. You have a pool that is 60 feet in length and 30 feet in width. How many square feet of surface area does this pool have:

- (a) 2,800 square feet
- (b) 3,600 square feet
- (c) 6,000 square feet
- (d) 1,800 square feet

11. The volume of your pool is 328,637 gallons. What is the volume rounded to the nearest thousand?

- (a) 328
- (b) 329
- (c) 329,000
- (d) 328,000

12. The current chlorine reading in your pool is 1.5 ppm. You want to raise it to 3.0 ppm. How many more ppm of chlorine do you need to add?
- (a) 4.5 ppm
 - (b) 3.0 ppm
 - (c) 1.5 ppm
 - (d) 2.0 ppm
13. How many cubic yards of concrete are needed to make a cement floor of a spa that 9 feet x 12 feet and 6 inches thick?
- (a) 2
 - (b) 4
 - (c) 18
 - (d) 54
14. Your pool slopes from 3.5 feet to 6.5 feet. What is the average depth of this pool?
- (a) 10 feet
 - (b) 5 feet
 - (c) 22.75 feet
 - (d) 3 feet
15. There is a leak in your pool and it loses 2.5 inches of water each day. It takes 1235 gallons for each inch of water in your 60 feet x 30 feet pool. How many gallons do you need to add to your pool each day?
- (a) 494 gallons
 - (b) 37,050 gallons
 - (c) 4,500 gallons
 - (d) 3,087.5 gallons
16. The diameter of a spa is 24 feet. What is the radius?
- (a) 6 feet
 - (b) 18 feet
 - (c) 12 feet
 - (d) 24 feet

Calculation Formulas (Imperial)

| Amount Conversions | |
|--------------------------------------|---|
| Ounces to Pounds | Ounces ÷ 16 = Pounds |
| Fluid Ounces to Gallons | Fluid Ounces ÷ 128 = Gallons |
| Distance Conversions | |
| Yards to Feet | Yards x 3 = Feet |
| Meters to Feet | Meters x 3.28 = Feet |
| Surface Areas | |
| Radius = Diameter ÷ 2 | |
| Rectangle/Square | Length x Width = Square Feet |
| Circle | 3.14 x Radius x Radius = Square Feet |
| Pool Volume | |
| Average Depth = (shallow + deep) ÷ 2 | |
| Rectangle | Length x Width x Average Depth x 7.5 = Gallons |
| Circle | 3.14 x Radius x Radius x Avg. Depth x 7.5 = Gallons |
| Formulas | |
| Turnover Rate | Pool Volume ÷ Flow Rate ÷ 60 = Hours |
| Flow Rate | Pool Volume ÷ Turnover Rate ÷ 60 = Gallons/Minute (gpm) |
| Filter Surface Area | Flow Rate ÷ Filtering Rate = Square Feet |
| Heater Sizing | Pool Volume x 8.33 x Temperature Adjustment = BTU |

Water Chemistry Guidelines

These commonly accepted chemical parameters do not supersede product label directions, local and state regulations.

| Parameter | Min | Ideal | Max | Pool Type |
|---|---------------|----------------------|------------------------------|--------------------|
| Free Chlorine (ppm or mg/L) | 1.0 | 2.0–4.0 | 5.0 | Pools, Water-parks |
| | 2.0 | 3.0–5.0 | 10.0 | Spas |
| Combined Chlorine (ppm or mg/L) | 0 | 0 | 0.4 | Pools, Water-parks |
| | 0 | 0 | 0.5 | Spas |
| Total Bromine (ppm or mg/L) | 2.0 | 4.0–6.0 | 10.0 | All Types |
| PHMB (ppm or mg/L) | 30 | 30–50 | 50 | All Types |
| pH | 7.2 | 7.4–7.6 | 7.8 | All Types |
| Total Alkalinity as CaCO ₃ (ppm or mg/L) | 60 | 80-100* 100–120** | 180 | All Types |
| Total Dissolved Solids (ppm or mg/L) | NA | NA | 1,500 over startup | All Types |
| Calcium Hardness as CaCO ₃ (ppm or mg/L) | 150 | 200–400 | 1,000 | Pools, Water-parks |
| | 100 | 150–250 | 800 | Spas |
| Heavy Metals | None | None | None | All Types |
| Visible Algae | None | None | None | All Types |
| Bacteria | None | None | Local Code | All Types |
| Cyanuric Acid (ppm or mg/L) | **** | 30–50 | **** | All Types |
| Temperature °F/°C | 78°F (25.5°C) | 80.5°F (26.9°C) | 82°F (27.8°C) | Competition Pools |
| | - | - | 104°F (40°C) | Spas |
| | - | Personal Preference | 104°F (40°C) | Other Pools |
| Ozone (ppm or mg/L) | - | - | 0.1 over 8 hr time wtd. avg. | All Types |

* For calcium hypochlorite, lithium hypochlorite, or sodium hypochlorite

** For sodium dichlor, trichlor, chlorine, gas, BCDMH

*** Start-up includes the TDS contribution of salt found in chlorine generating systems

**** Dictated by local codes. Typically 100 ppm (mg/L). Some codes are higher, some are lower

***** Some local codes may dictate a minimum and maximum

Saturation Index Worksheet

| | Value | Factor | New Value | Factor |
|------------------------|-------|--------|-----------|--------|
| pH | | | | |
| Temperature | | | | |
| Calcium Hardness | | | | |
| Carbonate Alkalinity | | | | |
| Sub-Total | | | | |
| Total Dissolved Solids | | | | |
| Saturation Index | | | | |

| | Value | Factor | New Value | Factor |
|------------------------|-------|--------|-----------|--------|
| pH | | | | |
| Temperature | | | | |
| Calcium Hardness | | | | |
| Carbonate Alkalinity | | | | |
| Sub-Total | | | | |
| Total Dissolved Solids | | | | |
| Saturation Index | | | | |

| | Value | Factor | New Value | Factor |
|------------------------|-------|--------|-----------|--------|
| pH | | | | |
| Temperature | | | | |
| Calcium Hardness | | | | |
| Carbonate Alkalinity | | | | |
| Sub-Total | | | | |
| Total Dissolved Solids | | | | |
| Saturation Index | | | | |



No Product Label Chemical Adjustment, Imperial

Given: Free Available Chlorine = 1.0 ppm (mg/L)

Unknown: How much sodium hypochlorite to add to raise the chlorine level to 3.0 ppm (mg/L)

Your chemical choice in this example is sodium hypochlorite from Appendix B-2

| Dosages to Treat | 10,000 Gallons | | | 40,000 Litres | | |
|----------------------------------|--------------------|---------|---------|----------------|--------|---------|
| | Desired Change | | | Desired Change | | |
| Increase Chlorine | 1 ppm | 5 ppm | 10 ppm | 1 mg/L | 5 mg/L | 10 mg/L |
| Chlorine Gas | 1.3 oz | 6.7 oz | 13 oz | 40 g | 200 g | 390 g |
| Calcium Hypochlorite (67%) | 2 oz | 10 oz | 1.3 lb | 63 g | 315 g | 630 g |
| Sodium Hypochlorite (12%) | 10.7 fl.oz. | 1.7 qts | 3.3 qts | 330 mL | 1.36 L | 3.3 L |
| Lithium Hypochlorite | 3.8 oz | 1.2 lbs | 2.4 lbs | 110 g | 570 g | 1.1 kg |

Your actual pool volume.
For example, 40,000 gallons.

Your desired chemical change. For example, your chlorine level is 1.0 ppm (mg/L) and you want to raise it to 3.0 ppm (mg/L). $3.0 - 1.0 = 2.0$ ppm (mg/L)

| Amount of Chemical (from Appendix B-2 or product label) | Actual Pool Volume | Desired Chemical Change | Total |
|---|---|---|----------------------|
| | 40,000 gal. | 2.0 | |
| | $\div 10,000$ gal. (from product label)* | $\div 1.0$ ppm (from product label)* | |
| 10.7 fl.oz (from product label) | X 4 | X 2 | = 85.6 fl.oz. |

Calculate the amount of chemical needed by first going down the columns and dividing the numbers.

$40,000 \div 10,000 = 4$ $2.0 \div 1.0 = 2$

Finally, go across the bottom row and multiply all the numbers.

$10.7 \times 4 \times 2 = 85.6$ fl.oz. or $85.6 \div 128 = 0.67$ gallons

Chemical Adjustment Worksheet (Imperial)

| Amount of Chemical (from product label) | | Actual Pool Volume | Desired Chemical Change | Total |
|--|---|--|--|----------|
| | | | | |
| | | $\div 10,000 \text{ gal}$ (from product label or Appendix B-2) | $\div \frac{\quad}{\text{ppm}}$ (from product label or Appendix B-2) | |
| | ↓ | ↓ | ↓ | |
| | | x | x | = |
| Amount of Chemical (from product label) | | Actual Pool Volume | Desired Chemical Change | Total |
| | | | | |
| | | $\div 10,000 \text{ gal}$ (from product label or Appendix B-2) | $\div \frac{\quad}{\text{ppm}}$ (from product label or Appendix B-2) | |
| | ↓ | ↓ | ↓ | |
| | | x | x | = |
| Amount of Chemical (from product label) | | Actual Pool Volume | Desired Chemical Change | Total |
| | | | | |
| | | $\div 10,000 \text{ gal}$ (from product label or Appendix B-2) | $\div \frac{\quad}{\text{ppm}}$ (from product label or Appendix B-2) | |
| | ↓ | | | |
| | | x | x | = |

Water Chemistry Adjustment Guidelines

These commonly accepted chemical parameters do not supersede manufacturers' instructions. Smart phone apps can help calculate associated pool volume and dosage. Chemical amounts have been rounded off for convenience. Always follow the instructions on the manufacturer's label for exact dosage

| Dosages to Treat | 10,000 Gallons | | | 40,000 Liters | | |
|-----------------------------|--|----------|----------|----------------|---------|---------|
| Chemical | Desired Change | | | Desired Change | | |
| Increase Chlorine | 1 ppm | 5 ppm | 10 ppm | 1 mg/L | 5 mg/L | 10 mg/L |
| Chlorine Gas | 1.3 oz | 6.7 oz. | 13 oz | 40 g | 200 g | 390 g |
| Calcium Hypochlorite (67%)* | 2 oz | 10 oz | 1.25 lbs | 63 g | 315 g | 630 g |
| Sodium Hypochlorite (12%) | 10.7 fl.oz. | 1.7 qts | 3.3 qts | 330 mL | 1.36 L | 3.3 L |
| Lithium Hypochlorite | 3.8 oz | 1.2 lbs | 2.4 lbs | 110 g | 570 g | 1.1 kg |
| Dichlor (62%) | 2.1 oz | 10.75 oz | 1.3 lbs | 65 g | 320 g | 650 g |
| Dichlor (56%) | 2.4 oz | 12 oz | 1.4 lbs | 72 g | 360 g | 720 g |
| Trichlor | 1.5 oz | 7.5 oz | 14 oz | 44 g | 220 g | 440 g |
| Increase Total Alkalinity | 10 ppm | 30 ppm | 50 ppm | 10 mg/L | 30 mg/L | 50 mg/L |
| Sodium Bicarbonate | 1.4 lbs | 4.2 lbs | 7.0 lbs | 670 g | 2.0 kg | 3.4 kg |
| Sodium Carbonate | 14 oz | 2.6 lbs | 4.4 lbs | 400 g | 1.2 kg | 2.0 kg |
| Sodium Sesquicarbonate | 1.25 lbs | 3.75 lbs | 6.25 lbs | 600 g | 1.8 kg | 3.0 kg |
| Decrease Total Alkalinity | 10 ppm | 30 ppm | 50 ppm | 10 mg/L | 30 mg/L | 50 mg/L |
| Muriatic Acid (31.4%) | 26 fl.oz. | 2.4 qts | 1 gal | 800 mL | 2.4 L | 4.0 L |
| Sodium Bisulfate | 2.1 lbs | 6.4 lbs | 10.5 lbs | 1.03 kg | 3.1 kg | 5.15 kg |
| Increase/Decrease pH | For more information on pH adjustments, see the pH Adjustment Testing section in the Chemical Testing chapter. | | | | | |
| Increase Calcium Hardness | 10 ppm | 30 ppm | 50 ppm | 10 mg/L | 30 mg/L | 50 mg/L |
| Calcium Chloride (100%) | 0.9 lbs | 2.8 lbs | 4.6 lbs | 402 g | 1.2 kg | 2.0 kg |
| Calcium Chloride (77%) | 1.2 lbs | 3.6 lbs | 6.0 lbs | 575 g | 1.7 kg | 2.9 kg |
| Increase Stabilizer | 10 ppm | 30 ppm | 50 ppm | 10 mg/L | 30 mg/L | 50 mg/L |
| Cyanuric Acid | 13 oz | 2.5 lbs | 4.1 lbs | 400 g | 1.2 kg | 2.0 kg |
| Neutralize Chlorine | 1 ppm | 5 ppm | 10 ppm | 1 mg/L | 5 mg/L | 10 mg/L |
| Sodium Thiosulfate | 2.6 oz | 13 oz | 26 oz | 79 g | 395 g | 790 g |
| Sodium Sulfite | 2.4 oz | 12 oz | 1.5 lbs | 71 g | 356 g | 711 g |

* Other calcium hypochlorite products are available from 47% to 78%. Follow the label directions for dosage amounts.



Breakpoint Chlorination, Imperial

Using Calcium Hypchloride, calculate the desired chemical change to achieve Breakpoint Chlorination in a 55,000-gallon pool with a FC of 1.5 ppm and a TC of 2.3 ppm:

Determine the amount of Combined Chlorine

$$\text{Total Chlorine (TC)} - \text{Free Chlorine (FC)} = \text{Combined Chlorine (CC)} = 2.3 \text{ ppm} - 1.5 \text{ ppm} = 0.8 \text{ ppm}$$

Calculate the Breakpoint Chlorination (BPC) amount

$$\text{Breakpoint (BPC)} = \text{CC} \times 10 = 0.8 \text{ ppm} \times 10 = 8.0 \text{ ppm}$$

Determine the desired change amount

$$\text{Desired Change} = \text{BPC} - \text{FC} = 8.0 \text{ ppm} - 1.5 \text{ ppm} = 6.5 \text{ ppm}$$

| Amount of Chemical (from Appendix B-2 or product label) | Actual Pool Volume | Desired Chemical Change | Total |
|---|--|------------------------------------|-------------------|
| | 55,000 gal. | 6.5 | |
| | ÷ 10,000 gal. (from product label)* | ÷ 1.0 ppm (from product label)* | |
| 2.0 oz. (from product label) | X 5.5 | X 6.5 | = 71.5 oz. |

Conversion: $71.5 \div 16 = 4.468$ lbs, rounded to 4.5 lbs.

Breakpoint Chlorination Worksheet (Imperial)

Step 1. Total Chlorine - Free Chlorine = Combined Chlorine

Step 2. Combined Chlorine x 10 - Existing FC = Adjustment

Step 3. Use Chemical adjustment worksheet below

| Amount of Chemical (from product label) | | Actual Pool Volume | Desired Chemical Change | Total |
|--|---|--|--|----------|
| | | | | |
| | | $\div 10,000 \text{ gal}$ (from product label or Appendix B-2) | $\div \frac{\quad}{\quad}$ ppm (from product label or Appendix B-2) | |
| | ↓ | x | x | = |

| Amount of Chemical (from product label) | | Actual Pool Volume | Desired Chemical Change | Total |
|--|---|--|--|----------|
| | | | | |
| | | $\div 10,000 \text{ gal}$ (from product label or Appendix B-2) | $\div \frac{\quad}{\quad}$ ppm (from product label or Appendix B-2) | |
| | ↓ | x | x | = |

Calculations Homework (Imperial)

1. What is the surface area of a circular spa with a 12 foot diameter?
2. What is the volume of a circular spa with a 12 foot diameter and a constant depth of 3.5 feet?
3. What is the surface area of a rectangular pool with a length of 105 feet and a width of 45 yards?
4. What is the volume of a rectangular pool with a length of 46 feet, a width of 24 feet, and a depth ranging from 4 feet in the shallow end to 8 feet in the deep end?
5. What is the surface area of a rectangular pool with a length of 75 yards and a width of 50 feet?
6. What is the volume of a rectangular pool with a length of 75 feet, a width of 50 feet, and a depth ranging from 3.5 feet in the shallow end to 12 feet in the deep end?
7. Calculate the Saturation Index for water that has a total alkalinity of 100 ppm, a pH of 7.3, a calcium hardness of 250 ppm, a temperature of 67°F, and a total dissolved solids of 1500 ppm. If it is not balanced, fix it.
8. Calculate the Saturation Index for water that has a total alkalinity of 100 ppm, a pH of 8.2, a calcium hardness of 200 ppm, a temperature of 78°F, and a total dissolved solids of 500 ppm. If it is not balanced, fix it.
9. Calculate the Saturation Index for water that has a total alkalinity of 70 ppm, a pH of 7.2, a calcium hardness of 200 ppm, a temperature of 77°F, and a total dissolved solids of 500 ppm. If it is not balanced, fix it.
10. Adjust the ALKALINITY from 70 ppm to 100 ppm in a 250,000 gallon pool using sodium bicarbonate.
11. An L-shaped pool is 175 feet long and 50 feet wide with a diving well 25 feet by 25 feet. How many gallons of water are lost each week if this pool loses $\frac{1}{4}$ inch per day due to evaporation and an additional 1 inch per week due to backwash and a leak?
12. Adjust the CALCIUM HARDNESS from 75 ppm to 150 ppm in a 150,000 gallon pool. Use Calcium Chloride 77%.
13. How much CYANURIC ACID is needed to raise the stabilizer level in a 75,000 gallon pool from 0 to 30 ppm?
14. How much CALCIUM HYPOCHLORITE is needed to breakpoint chlorinate a 125,000 gallon pool if the combined chlorine is 0.4 ppm, and free chlorine is 1.0 ppm?
15. An accidental fecal release occurs in a pool. The state health department requires raising the free chlorine level from 4 ppm to 20 ppm for 20 hours. How many gallons of sodium hypochlorite would be needed for an 80,000 gallon pool?
16. What is the turnover rate of a 3500 gallon commercial spa that has a flow rate of 150 gpm?
17. What is the flow rate of a 3500 gallon spa based on a 30 minute turnover rate?
18. A D.E. filter has eight elements each measuring 2.5 feet by 9 inches wide. What is the square footage of this filter?
19. A sand filter is 5 feet in diameter and 3 feet in depth. How much filter surface area does this filter have?
20. A 275,000 gallon pool needs to turn over the water every 8 hours. What flow rate is required for this turnover rate?
21. A pool with a sand filter system has a flow rate of 220 gpm and an optimal media flow rate of 12 gpm per square foot of filter medium. What is the required square feet of filter area to meet this need?

APPENDIX Q

Calculations Homework Answers

1. Surface area = $6 \times 6 \times 3.14 = 113$ square feet
2. Volume = $6 \times 6 \times 3.14 \times 3.5 \times 7.5 = \sim 2,967$ gallons
3. Surface area = $105 \times (45 \text{ yards} \times 3 = 135 \text{ feet}) = 14,175$ square feet
4. Volume = $46 \times 24 \times 6 \times 7.5 = 49,680$ gallons
5. Surface area = $(75 \text{ yards} \times 3 = 225 \text{ feet}) \times 50 \text{ feet} = 11,250$
6. Volume = $75 \times 50 \times 7.75$ (average depth) $\times 7.5 = \sim 217,969$ gallons

7. Within ideal range

| | | |
|------------------|------|-------|
| pH | 7.3 | 7.3 |
| Temperature | 67 | 0.6 |
| Alkalinity | 100 | 2.0 |
| Calcium Hardness | 250 | 2.0 |
| TDS | 1500 | -12.2 |
| Saturation Index | | -0.03 |

8. Scale forming: add acid a little at a time frequently to not drop total alkalinity too drastically

| | | |
|------------------|-----|-------|
| pH | 8.2 | 8.2 |
| Temperature | 78 | 0.7 |
| Alkalinity | 100 | 2.0 |
| Calcium Hardness | 200 | 1.9 |
| TDS | 500 | -12.1 |
| Saturation Index | | 0.7 |

9. Corrosive: balance by raising alkalinity as well as calcium

| | | |
|------------------|-----|-------|
| pH | 7.2 | 7.2 |
| Temperature | 77 | 0.7 |
| Alkalinity | 70 | 1.9 |
| Calcium Hardness | 200 | 1.9 |
| TDS | 500 | -12.1 |
| Saturation Index | | -0.4 |

10. $1.4 \text{ pounds} \times 3 \times 25 = 105$ pounds of alkalinity needed to raise from 70 ppm to 100 ppm in a 250,000 gallon pool
11. $175 \times 50 = 8,750 + (25 \times 25 = 625) = 9,375$ square feet $\times 2.75 \times 0.0833 \times 7.5 = \sim 16,107$ gallons

APPENDIX Q

Calculations Homework Answers (cont'd)

12. $1.2 \text{ pounds} \times 7.5 \times 15 = 135 \text{ pounds}$
13. $13 \text{ ounces} \times 3 \times 7.5 = 292.5 \text{ ounces} \div 16 = 18 \text{ or } 19 \text{ pounds}$
14. $0.4 \text{ combined chlorine} \times 10 = 4 \text{ ppm} - 1 \text{ ppm (FC)} = 3 \text{ ppm} \times 2 \text{ ounces} \times 12.5 = 75 \text{ ounces} \div 16 = 4.7 \text{ pounds}$
15. $10.7 \text{ ounces} \times 16 \times 8 = 1369.6 \div 128 = 10.7 \text{ grids}$
16. $3,500 \div 150 \text{ gpm} \div 60 = 0.388 \text{ hours}$
17. $FR = 3,500 \div 30 \text{ minutes} = 116.6 \text{ gpm}$
18. To find D.E square footage: $8 \text{ (elements)} \times 2.5 \text{ feet} \times 0.75 \text{ (9 inches)} \times 2 \text{ (sides)} = 30 \text{ square feet}$
19. To find the sand filter surface area: $2.5 \times 2.5 \times 3.14 = 19.63 \text{ square feet}$
20. $\text{Flow rate} = 275,000 \div (8 \times 60 = 480) = 573 \text{ gpm}$
21. $FA = FR \div FMR$ $FA = 220 \text{ gpm} \div 12 \text{ gpm per square foot}$ $FA = 18.33 \text{ square feet}$



Daily Pool/Spa Chemical Log

Pool _____

Date _____

Initialed by _____

Notes _____

| Item | 1st | 2nd | 3rd | 4th | Standard (Min Max Ideal) |
|----------------------|-----|-----|-----|-----|---------------------------------|
| Time | | | | | |
| FAC | | | | | 1 5 2-4 ppm (mg/L) |
| CAC | | | | | 0 0.2 pools (0.5 spas) 0 |
| pH | | | | | 7.2 7.8 7.4-7.6 |
| ORP | | | | | 650 or code compliance |
| Total Alkalinity | | | | | 60 180 80-120 |
| Cyanuric Acid | | | | | 30-50 150 ppm (mg/L) |
| Calcium Hardness | | | | | 150 1000 ppm (mg/L) 200-400 |
| Water Temperature °F | | | | | NA 104°F 78-82°F |
| Water Temperature °C | | | | | NA 40°C 25.5-27.8°C |
| TDS | | | | | 1,500 ppm (mg/L) over starting |
| Saturation Index | | | | | -0.3 to +0.5 |
| Water Clarity | | | | | Main drain clearly visible |



| | | | | | |
|--------------------------|--|--|--|--|-------------------------------|
| Water Level | | | | | 1/8–1/4" (3–6mm) above gutter |
| Bather Load | | | | | |
| Flow Rate | | | | | |
| Turnover | | | | | |
| Influent Pressure | | | | | |
| Effluent Pressure | | | | | |
| Pressure Differential | | | | | |
| Air Temperature | | | | | |
| Certified Operator ID(s) | | | | | |

Chemicals Added (Check local codes to see which tests must be conducted and testing frequency.) Opening

Closing _____