Water Pollution Control System Operator Exams (8.4)

NORTH CAROLINA OPERATOR CERTIFICATION PROGRAM

Patrick Beggs

NC Division of Water Resources

Department of Environmental Quality

deq.nc.gov/opcert

2024

website

- deq.nc.gov/opcert
  - Choose Wastewater Program

- can just Google NC DWR opcert

NORTH CAROLINA
OPERATOR
CERTIFICATION
PROGRAM

NCAC 15A 8G
Water Pollution Control System Operator Rules

Water
Pollution
Control
System
Operators
Certification
Commission

WPCSOCC

WPCSOCC Purpose

- protect public health
- conserve & protect water quality
- protect public investment
- classify facilities
- provide operator certification

WPCSOCC

- 11 members
- Appointed by Secretaries of DEQ and DA&CS
- Classify systems
  - Talk about this on Thursday
- Administer 8G Rules
  - Talk about this on Thursday
- Certify operators
  - Exams

All EXAM Eligibility Requirements

General requirements

- 18 years old or older
- High school degree or GED
- Approved training school
  - (no time limit)
- Perform calculations
- Read/understand regulations

SI EXAM Eligibility Requirements

Surface Irrigation: Must meet ONE of the following

- 1 year actual operational experience

  OR

- WW2 or higher certification

  OR

- 2 or 4 year degree with 6 science/math courses

  OR

- Private homeowner operating their own system

Actual experience

"Actual experience" *is*

- Hands-on experience working as an operator
- Physical operation of the system
- Avg: 4 hours/wk over a year (≈ 200 hrs)

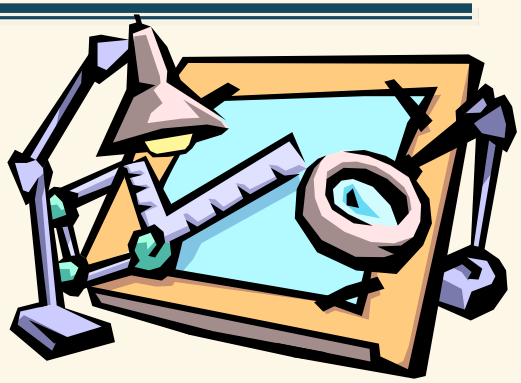
NOT Actual experience

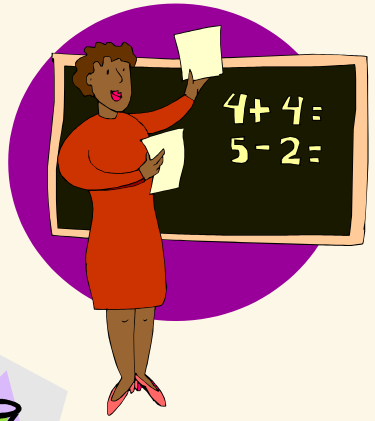
"Actual experience" *is* NOT

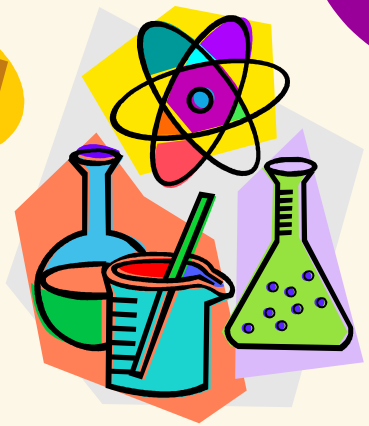
- Installation
- Lab testing
- Facility of equipment maintenance
- Administrative support
- Direct or indirect supervision

Basic Science Courses

- Agronomy
- Biology
- Botany
- Chemistry
- Environmental health
- Engineering
- Geology
- Math
- Physics
- Soil science
- Zoology







SI EXAM Eligibility Requirements

What if you do not meet at least one of these

- 1 year actual operational experience

  OR

- WW2 or higher certification

  OR

- 2 or 4 year degree with 6 science/math courses

  OR

- Private homeowner operating their own system

Operator-in-Training (OIT)

If you do not meet the SI exam eligibility requirements, then:

1. Apply as an Operator-in-Training (OIT)
2. Gain required experience
3. Convert to full certification ($50)

COMPLETE exam application

- Required signatures: You and Supervisor/other
- SI School Certificate
- Detailed experience **OR**
  - Transcripts **OR**
    - Operator # for WW2 or higher, **OR**
      - I'm a private homeowner w/ own system
- Mail application with a $85 check/money order

Postmark deadline:
30 days prior

Exam Locations & Times

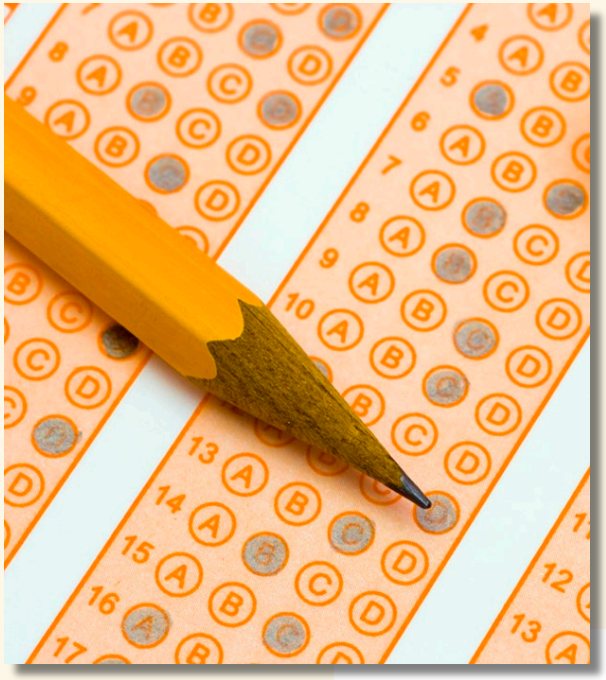
2024 Exam Dates	Postmark Deadlines
June 13	May 15
Sept 12	Aug 13
Dec 5	Nov 5

Exam Locations
Waynesville
Morganton
Salisbury
Raleigh
Kenansville
Williamston

Dates, times, and locations may change !
Read your confirmation letter !

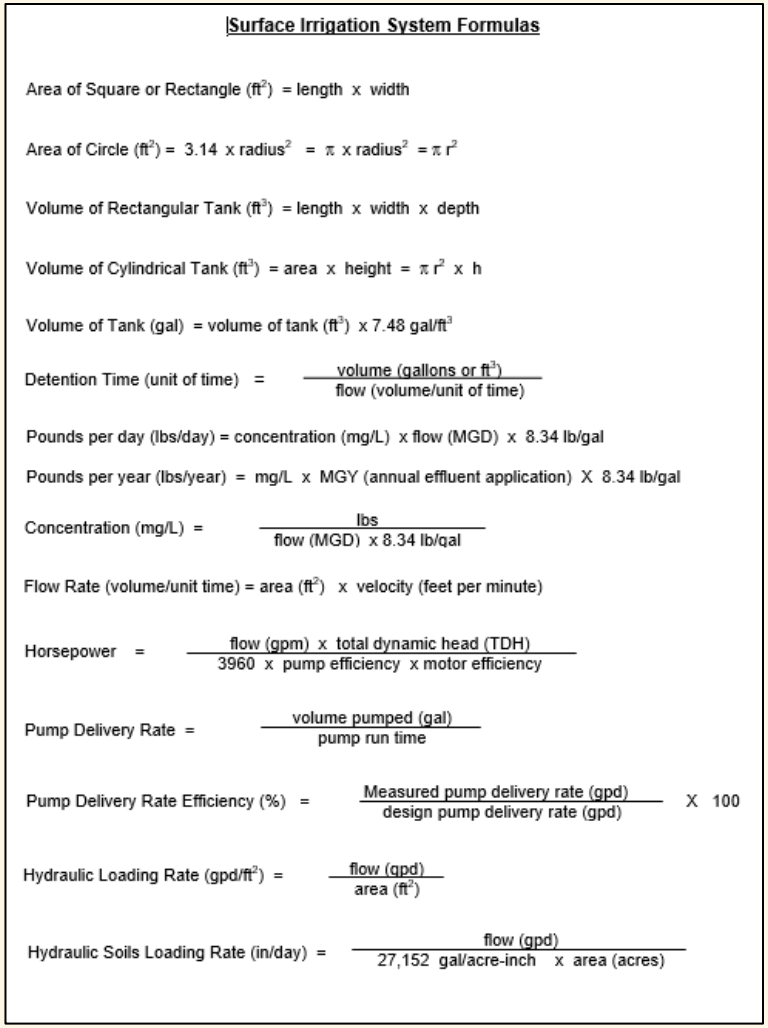
Exam

- 50 multiple choice questions
- ~ 7 math questions
- Passing score = 70%
- Math formulas provided



Math Formula Sheet

- 2 pages
- in manual
- on the website
- given out at exam



Surface Irrigation System Formulas

Area of Square or Rectangle (ft^2) = length x width

Area of Circle (ft^2) = 3.14 x $radius^2$ = π x $radius^2$ = πr^2

Volume of Rectangular Tank (ft^3) = length x width x depth

Volume of Cylindrical Tank (ft^3) = area x height = πr^2 x h

Volume of Tank (gal) = volume of tank (ft^3) x 7.48 gal/ft^3

Detention Time (unit of time) = $\frac{\text{volume (gallons or } ft^3)}{\text{flow (volume/unit of time)}}$

Pounds per day (lbs/day) = concentration (mg/L) x flow (MGD) x 8.34 lb/gal

Pounds per year (lbs/year) = mg/L x MGY (annual effluent application) X 8.34 lb/gal

Concentration (mg/L) = $\frac{\text{lbs}}{\text{flow (MGD) x 8.34 lb/gal}}$

Flow Rate (volume/unit time) = area (ft^2) x velocity (feet per minute)

Horsepower = $\frac{\text{flow (gpm) x total dynamic head (TDH)}}{\text{3960 x pump efficiency x motor efficiency}}$

Pump Delivery Rate = $\frac{\text{volume pumped (gal)}}{\text{pump run time}}$

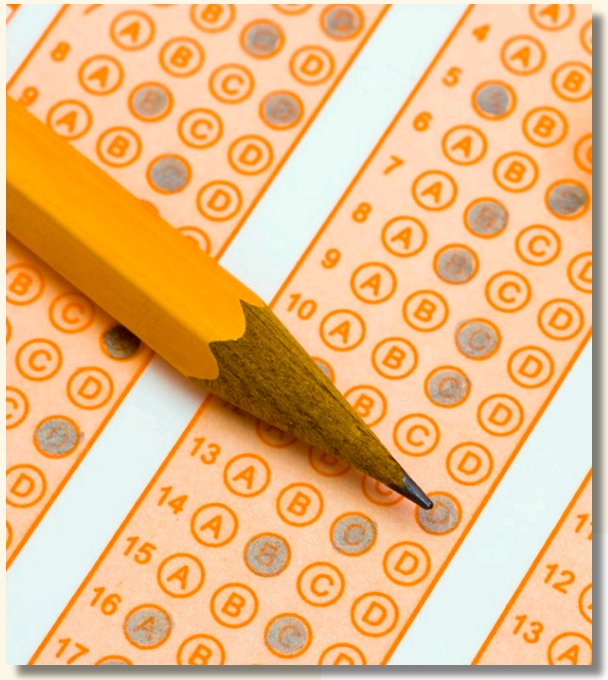
Pump Delivery Rate Efficiency (%) = $\frac{\text{Measured pump delivery rate (gpd)}}{\text{design pump delivery rate (gpd)}}$ X 100

Hydraulic Loading Rate (gpd/ft^2) = $\frac{\text{flow (gpd)}}{\text{area } (ft^2)}$

Hydraulic Soils Loading Rate (in/day) = $\frac{\text{flow (gpd)}}{\text{27,152 gal/acre-inch x area (acres)}}$

Exam

- Bring a calculator
- Cannot use phone as calculator
- Allowed 3 hours
- We give you scratch paper
- School required after 3 attempts
- Results in a couple weeks
  - Post exam review
  - Re-application form



Thank you to the Instructors

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