

DACUM Research Chart for Class 2 Water Operator

DRAFT

DACUM Panel

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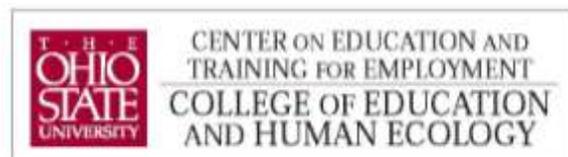
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Duties		← Tasks →				
A	Manage Source Water	A-1 Identify source water area	A-2 Collect raw water samples	A-3 Review raw water lab results	A-4 Develop source water protection program	A-5 Implement source water protection program
	B	Manage Treatment Processes	B-1 Complete facility inspection	B-2 Monitor SCADA system	B-3 Obtain chlorine sample results	B-4 Obtain fluoride sample results
B-13 Adjust water treatment rate			B-14 Adjust chemical feed rates	B-15 Fill chemical day tanks	B-16 Backwash filters	B-17 Regenerate water softeners
B-24 Calibrate bench top meters			B-25 Change flow charts	B-26 Refill bulk chemical storage	B-27 Unload chemical deliveries	B-28 Complete daily worksheet
C			Comply with EPA Sample Requirements	C-1 Collect SOC samples	C-2 Collect VOC samples	C-3 Collect TTHM/HAA5 samples
	C-13 Collect organics samples (e.g., benzene, carbon tetrochloride, toluene)			C-14 Collect crytosporidium/giardia samples	C-15 Collect special bacteria samples	C-16 Collect dissolved oxygen samples
D	Manage Distribution Processes	D-1 Monitor chlorine/chloride residual levels	D-2 Develop backflow prevention program	D-3 Implement backflow prevention program	D-4 Inspect booster stations	D-5 Inspect water towers
		D-13 Maintain hydrants	D-14 Exercise valves	D-15 Read meters	D-16 Maintain meter pit integrity	D-17 Rotate booster/lift station pumps
E	Perform Preventive Maintenance	E-1 Develop preventive maintenance program	E-2 Change oil/fluids in equipment (e.g., motors, compressors)	E-3 Grease equipment (e.g., pumps, valves)	E-4 Test-run equipment (e.g., pumps, valves, generators)	
		E-12 Calibrate chlorine meters	E-13 Calibrate lab equipment	E-14 Calibrate transducers	E-15 Oversee scale calibration	E-16 Rebuild chlorinators
		E-24 Perform plumbing troubleshooting	E-25 Perform electrical troubleshooting	E-26 Change filter media	E-27 Change softener salt	E-28 Evaluate softener efficiency
		E-35 Exercise emergency generators	E-36 Clean reaction tanks	E-37 Powerwash filters	E-38 Clean aerators	E-39 Clean chemical feed day tanks

A-6 Develop well head protection program		A-7 Implement well head protection program		A-8 Determine well performance (e.g., water level, rate of flow, pump efficiency)		A-9 Rotate well usage									
B-6 Obtain hardness sample results		B-7 Obtain pH sample results		B-8 Obtain routine bacteria sample results		B-9 Obtain iron & manganese sample results		B-10 Determine chemical dosages		B-11 Determine quantity of water storage/reserve		B-12 Determine water treatment rate (e.g., influent, effluent, demand)			
B-18 Pump raw sludge		B-19 Regenerate carbon		B-20 Change chlorine cylinders		B-21 Change fluoride drums		B-22 Change phosphate drums		B-23 Rotate water treatment equipment (e.g., pumps, compressors, sand filters)					
C-6 Collect unregulated contaminants samples		C-7 Collect asbestos samples		C-8 Collect nitrate/nitrites samples		C-9 Collect chloride samples		C-10 Collect mercury samples		C-11 Collect PCB samples		C-12 Collect inorganics samples (e.g., arsenic, cadmium)			
C-17 Collect sodium samples		C-18 Submit samples to lab for analysis		C-19 Analyze lab test results											
D-6 Identify water leaks		D-7 Repair water leaks		D-8 Repair water valves		D-9 Replace water mains		D-10 Install new water mains		D-11 Flush hydrants/lines		D-12 Locate water services (e.g., taps, mains, valves)			
D-18 Install new taps		D-19 Perform shut-offs/turn-ons		D-20 Identify unaccounted-for water		D-21 Coordinate radio installations		D-22 Maintain hydrant accessibility (e.g., snow, vegetation)		D-23 Update distribution maps		D-24 Thaw frozen meters/hydrants		D-25 Inspect new water main installations	
E-5 Exercise scrubber system		E-6 Service generators		E-7 Perform plant security checks		E-8 Test call-out security system		E-9 Check pumps (e.g., efficiency, flow, alignment)		E-10 Calibrate flow meters		E-11 Calibrate feed pumps			
E-17 Replace pump seals/packing		E-18 Rebuild vacuum primers		E-19 Rebuild chemical feed pumps		E-20 Check chemical feed lines		E-21 Exercise sump pumps		E-22 Flush sludge pumps		E-23 Prepare maintenance work orders			
E-29 Evaluate filter efficiency		E-30 Perform filter coring		E-31 Inspect safety equipment (e.g., fire extinguishers, SCBA, gas detectors)				E-32 Perform tank leak tests		E-33 Perform vehicle maintenance		E-34 Maintain inside/outside lighting			
E-40 Clean HVAC equipment		E-41 Inspect carbon regeneration furnace		E-42 Clean clear wells		E-43 Disinfect wells		E-44 Perform computer program updates		E-45 Perform general housekeeping (e.g., sweep, mop, dust)					

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Duties		← Tasks →				
E	Perform Preventive Maintenance – cont.	E-46 Paint hydrants	E-47 Paint facilities (e.g., building, piping, railing)	E-48 Perform groundskeeping (e.g., mow, plow, trim)		
	F	Develop Regulatory Plans	F-1 Assist in developing disinfection byproducts plan (e.g., Stage 1 & 2)		F-2 Assist in developing emergency disaster plan	F-3 Assist in developing vulnerability assessment plan
G		Manage Staff/Contractors	F-12 Assist in developing chlorine emergency plan	F-13 Assist in updating regulatory plans		
	G-1 Assist in interview/hiring process		G-2 Provide plant orientation	G-3 Provide training to employees	G-4 Schedule employees	G-5 Conduct employee performance evaluations
	G-13 Oversee cathodic protection program		G-14 Oversee well cleaning	G-15 Oversee installation of new mains		
H	Perform Administrative Tasks	H-1 Attend meetings (e.g., staff, public, contractor)	H-2 Prepare monthly operating report	H-3 Prepare monthly chlorine report	H-4 Prepare monthly chloride report	H-5 Prepare lead & copper report
		H-13 Obtain bids	H-14 Obtain quotes	H-15 Maintain MSDS	H-16 Maintain records (e.g., employee, test results, file disposition)	
		H-24 Review proposed construction plans	H-25 Bill for bacteria samples	H-26 Prepare operating budget	H-27 Monitor operating budget	H-28 Deliver presentations (e.g., public, council, EPA)
		I-1 Prepare Consumer Confidence Report (CCR)	I-2 Resolve customer issues (e.g., pressure, color, high usage)	I-3 Provide customer information (e.g., water softeners, water availability, billing)		I-4 Perform final meter readings (e.g., moving, vacation)
J	Maintain Professional Certification	J-1 Obtain professional certifications	J-2 Participate in CEU events (e.g., seminars, in-house training)	J-3 Maintain plant operating license	J-4 Maintain lab certification	J-5 Maintain records of certification

F-5 Assist in developing lead & copper plan	F-6 Assist in developing chlorine/fluoride citing plan	F-7 Assist in developing bacteriological citing plan	F-8 Assist in developing hydrant flushing plan	F-9 Assist in developing backflow prevention plan	F-10 Assist in developing confined space plan	F-11 Assist in developing lockout/tagout plan
G-6 Approve employee overtime	G-7 Approve employee timesheets	G-8 Administer employee discipline	G-9 Approve employee leave requests	G-10 Oversee well drilling	G-11 Oversee well abandonment	G-12 Oversee tower painting
H-6 Participate in sanitary survey	H-7 Prepare ODNR well withdrawal report	H-8 Approve invoices for payment	H-9 Order supplies (e.g., office, chemicals)	H-10 Prepare purchase orders	H-11 Approve work orders	H-12 Assist in preparing bid specs
H-17 Maintain O&M manuals	H-18 Maintain employee uniform program	H-19 Review permits for line extensions	H-20 Maintain inventory (e.g., parts, supplies, chemicals)	H-21 Complete incident reports	H-22 Prepare chain of custody report	H-23 Prepare sample submission report
I-5 Issue public service announcements (e.g., boil orders, hydrant flushing, main breaks)		I-6 Conduct plant tours	I-7 Provide bulk water	I-8 Participate in community events (e.g., parades, festivals, fairs)	I-9 Coordinate leak repair restoration (e.g., sidewalks, lawns)	
J-6 Provide certified operator training	J-7 Participate in lab survey	J-8 Attend college-related courses				

General Knowledge and Skills

Basic math	Record keeping skills
Basic chemistry	Basic computer skills
Time management skills	Interviewing skills
Knowledge of testing procedures	Evaluating skills
Advanced knowledge of water treatment methods	Basic mechanical ability
Local, State, & Federal regulations	Basic electrical ability
OSHA/safety knowledge	Communication skills
Knowledge of municipal government	Problem solving skills
Facility maintenance	Interpersonal skills
Vehicle maintenance	Leadership skills
Training skills	Customer service skills
Multi-tasking skills	Decision making skills
	Social skills

Worker Behaviors

Physically able to perform tasks	Good listener
Dedicated	Attentive
Honest	Focused
Knowledgeable	Dependable
Flexible	Willing to learn
Punctual	Assertive
Responsible	Common sense
Self motivated	Conscientious
Resourceful	Positive
Thick skinned	Compliance oriented
Professional	Team player
Adaptable	Respectful
Able to work independently	Detail oriented
Customer service oriented	Analytical
Problem solver	Open minded

Tools, Equipment, Supplies and Materials

Colorimeter	Tapping machine
Ton cylinder wrench	Safety equipment
Basic hand tools	Air compressor
Hydrant wrench	Portable generator
Water diffuser	PPE
Ladders	Power tools
Powerwasher	Trailers
Calculator	Basic office supplies
Gas detector	Dolly
Computer	Hoist
Mower	Basic lab equipment
File cabinet	Valve wrench
Weed eater	Lid cover puller
Backhoe	Multimeter
O&M manual	Electrical meter
Trucks (dump, pickup)	Sampling equipment
Skid loader	Reagents/buffers
Cleaning equipment	Communication equipment
Grease gun	First aid supplies
VCR/DVR/TV	

Future Trends and Concerns

Increasing demand for water will lead to shortages
Growing EPA regulations
Growing contamination of water sources
Aging water infrastructure
Shortage of qualified employees
Rising operating costs (fuel, health insurance, salaries)
Growing privatization of utilities
Declining quality of CEU training
Increased security concerns
Growing funding challenges

Acronyms

CCR	Consumer Confidence Report
CEU	Continuing Educational Units
HVAC	Heating Ventilation & Air Conditioning
MSDS	Material Safety & Data Sheets
O&M	Operations and Maintenance
ODNR	Ohio Department of Natural Resources
PCB	Polychlorinated Biphenyls
SCBA	Self Contained Breathing Apparatus
SOC	Synthetic Organic Compound
TTHM	Total Trihalomethane
VOC	Volatile Organic Compound