



Bock Consulting

Job Analysis

Job Title	Industrial Waste Treatment Plant Operator (AVM)	Worker
DOT Number	954.382-014 & 630.281-038	Claim Number
Employer	Port of Seattle	Employer Phone # (206) 787-4832
Employer Contact	Angie Schmitke	Date of Analysis 5/2/11; 11/2/11; 4/4/14; 9/12/16; 12/21/18, 3/28/22

- Job of Injury
 Transferable
 New Job
 8-10 Hours Per Day
 4-5 Days Per Week
 Skills Job

Job Description, Essential Functions, Tasks and Skills:



The Port of Seattle is a municipal corporation created on September 5, 1911 by the voters of King County. The Port of Seattle is divided into operating divisions, plus other departments that support the divisions and the broad mission of the Port: 1) Aviation Division, 2) Maritime Division, and 3) Economic Development Division.

The Aviation Division owns and operates Seattle-Tacoma International Airport. Sea-Tac Airport handles more than 40 million passengers a year, and offers state-of-the-art air cargo facilities.

This job analysis is for an Industrial Waste Treatment Plant Operator working in the Industrial Waste Treatment Plant (“IWTP”) for the Aviation Maintenance Department at Sea-Tac Airport.

The IWTP is used to remove heavy metals,¹ surface oils, and other contaminants from rainwater collected from specific surface areas of Sea-Tac Airport (including the parking garage, building roofs, open parking areas, ramps, taxiways, and gate areas). During the winter months, glycol is used to deice planes, and water containing glycol is segregated for secondary treatment by King County.



The rainwater is collected in three lagoons that can hold approximately 80 million gallons of water. One inch of rainwater in the specified areas generates about 8 million gallons of surface water. Therefore, significant rainstorms may increase operational needs at the plant, especially during winter months.

¹ Heavy metals may include zinc, mercury, and cyanide.



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IWTP Operators are tasked with the operation, maintenance, repair, and renovation of the equipment and facilities related to the wastewater systems and the IWTP.

Operators generally work four 10-hour shifts during the drier/summer months, and five 8-hour shifts during the wetter/winter months to provide 24-hour coverage at the IWTP. Hours and shifts may change due to operational needs, influenced by weather patterns and maintenance issues. Winter weather conditions may increase work hours and weekend shifts may be added to the work schedule during the wetter/winter months.



Of note, there may only be one individual working on a specific shift; therefore, an Operator must be able to perform any of the essential functions of the job without help from other personnel.

Work tasks can be performed at the IWTP, in an office connected to the IWTP, in a workshop or pump station located in an adjacent building, or in the field at areas related to the IWTP.



Essential Functions:

IWTP workers perform a wide variety of tasks. In general, 6 to 7 hours of a 10-hour shift may be spent monitoring the various water treatment systems and equipment, and collecting and testing water samples.

Task examples:

- Utilize computers to maintain surveillance of check stations, gauges and recorders of the various systems and equipment to ensure that the treatment of industrial wastes complies with established standards.
- Prepare and maintain treating solutions by adding specified chemicals in proper amounts and sequences.
- Adjust chemical feeds/pumping rates to compensate for various types of contamination and influent fluctuations to maintain adequate treatment levels.
- Collect water samples (a minimum of three times per shift) to perform chemical tests and analyses of wastewater in accordance with instructions and





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laboratory procedures. The outcome of these tests will influence whether further treatment is needed of the wastewater, or if the water can be released to Puget Sound. If further treatment is needed, the water may be recycled through the IWTP, or it may be sent to a King County water treatment facility for additional processing.

- Record plant operations in a logbook, and sample qualities on a log sheet. Prepare and maintain records, charts, and reports as required.
- Prepare water samples for pick-up by a courier or delivery by staff to outside testing laboratory.
- Diagnose and correct malfunctions in the industrial waste systems and equipment.
- Respond to emergency maintenance (“EM”) issues. Troubleshoot problems, develop a plan of action to address the issue(s), and implement solution(s).
- Between routine plant operation tasks, or during times of limited precipitation, perform tasks to address corrective maintenance (“CM”) concerns, or preventive maintenance (“PM”) projects. Project examples may include:
 - Repair/replace various pumps and valves.
 - Use fire hose to clean out water processing units.
 - Repair/replace sprockets and chain on skimmer drives.
 - Repair/replace lagoon transfer pump lifting guides and travel screens.
 - Repair/replace drain piping.
 - Cut and form metal. Weld/solder materials.
 - Install piping.
 - Fabricate/machine replacement piping and plumbing items. Cut and thread pipes.
 - Repair/replace various air rotometers.
 - Survey and replace chemical tubing.
 - Repair/replace couplings on recycle pumps.
 - Perform inspections in various chemical systems and document completed inspections.
- General clean-up as necessary.
- Maintain inventory of industrial waste treatment chemicals, laboratory chemicals and supplies.
- Assist with the delivery, unloading, and storing of distilled water, various chemicals, and supplies.





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- Perform special projects as requested.

Necessary skills and abilities include:

- Have the skills to complete the assigned task(s), using all of the various types of tools and equipment, in a safe manner.
- Be able to work independently, with minimal written or verbal instructions and have the experience, knowledge, and abilities to identify and trouble-shoot an issue quickly, identify the best method(s) to address an issue, and correctly complete the identified task.
- Have the ability to work with acids, caustics, cyanide, heavy metals, and various other industrial chemicals.
- Be able to follow directions and stated tolerances closely, and being detailed oriented.
- Be able to work independently, but also within a team environment.
- Be able to read precision measuring instruments and correctly interpret data to properly direct treatment of water.
- Fundamental knowledge of boiler, plumbing, and mechanical systems.
- Be familiar with Window-based desktop computers, computer accessories, job tracking system (Maximo), and Microsoft Office software.

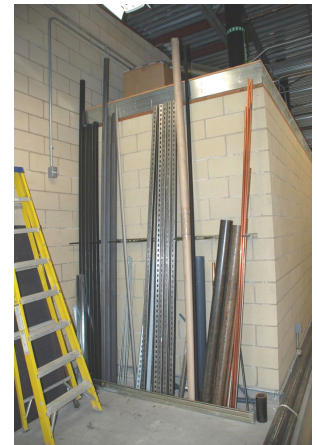




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Machinery, Tools, Equipment, Personal Protective Equipment:

- Daily log book and log sheets.
- Water processing equipment, including evaporation, recarbonating, dispensing, pumping, filtering, handling, and feeding systems, settling basins, sludge and oil draw-off units, reactors, agitators, pumps, valves, meters, gauges, controls and recording equipment, vertical and flotation bulk tanks, etc.
- Chemical meters. Various sizes of glass and plastic sample jars.
- Plastic and metal barrels. Various sized containers of chemicals, such as oxidizer, aluminum sulfate, and other caustics. Caustic soda is delivered in 55-gallon containers weighting 700 pounds. Drum transfer pumps.
- 5-gallon containers of water.
- Water sample dipping stick.
- Insulated coolers.
- Rakes and brooms.
- Stopwatch.
- Fire hoses (up to 2”).
- Hand tools, including wrenches (some up to 3 feet long and 12 pounds), pliers, vice grips, screwdrivers, tape measures, flashlights, utility knives, and hammers.
- Power tools, including saws, impact wrenches, drills, and grinders.
- Gas-powered generator.
- MIG and stick welding equipment.
- Work benches. Work tables.
- Various lengths of pipe (20 foot lengths, typically 2” to 4” in diameter, but may be up to 10”).
- 2-way radios.
- Ladders: step, self-supporting, and extension.
- Hand trucks and drum trucks.
- Tool boxes, bags, or buckets.
- Overhead hoists and 1,000 pound crane.





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- Windows-based desktop computers and accessories (used by workers to monitor operations of the various system components, track parts usage/inventory, document completed work tasks, document work requests, and receive and send electronic mails).
- Office equipment, such as telephone, copier, printer, fax machine, stapler, pens, pencils, clipboards, three ring binders, file folders, shelves, cabinets, and drawer units.
- Technical manuals and parts catalogs.

IWTP personnel wear latex, Nitrile, or rubber gloves when working in the plant, particularly when adding chemicals to water, processing samples, mixing solutions, and transfer chemicals from bulk to smaller storage containers. Workers will typically wear hearing protection when entering the IWTP, and will also wear safety glasses/face shields, gloves and protective clothing when completing fabrication tasks, such as welding. Additionally, workers will wear safety vests, hardhats, and fall arrest harnesses as required. Confined space testing and safety equipment is also used by the IWTP staff as required (including powered blowers).



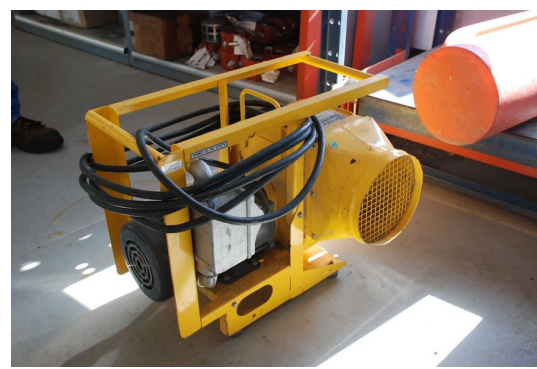
Large Pump



Valves and Gauges



Water Testing Equipment



Confined Space Blower



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Education / Training:

High school diploma or equivalent.

The IWTP Operators are represented by the Operating Engineers Union (Local 302).

The IWTP seeks to hire employees with at least 5 years of experience with industrial boiler systems, or specific wastewater treatment plants.

IWTP Operators must have the following current certificates or licenses:

- Washington State Department of Ecology Wastewater Treatment Plant Operator In Training Certificate.
- Washington State Driver's License or other evidence of mobility.
- City of Seattle Refrigeration Operators License.
- CFC Universal License (refrigerant license from the EPA).
- City of Seattle Grade 2 Steam License.

The Operator in Training Certificate requires a minimum of 3 months of domestic wastewater treatment plant operating experience. College credits or continuing education units in courses relevant to wastewater can be substituted for actual operating experience. The Certificate requires the applicant take and pass an exam.

Workers must also have the ability to pass required FAA/FBI background checks, and Security Identification Display Area ("SIDA") and Aircraft Operations Area ("AOA") training courses.

New hires are generally assigned to shadow more experienced workers to learn the specific tasks and duties assigned to IWTP Operators.

Per the Dictionary of Occupational Titles (DOT):

954.382-014 WATER-TREATMENT-PLANT OPERATOR (SVP=5 – Six months to one year)

630.281-038 WATER-TREATMENT-PLANT MECHANIC (SVP=6 – From one to two years)



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COGNITIVE AND BEHAVIORAL ELEMENTS/DEMANDS

Frequency Definitions:	
Continuously = Occurs 66-100% of the time.	Occasionally = Occurs 1-33% of the time
Frequently = Occurs 33-66% of the time.	Rarely = May occur less than 1% of the time.
Never = Does not ever occur.	
Comprehension	
Articulating and comprehending information in conversations.	Frequently
Reading, comprehending, and using written materials.	Continuously
Understanding and solving problems involving math and using the results.	Occasionally
Using technology/instruments/tools & information systems.	Continuously
Working with two and three dimensional formats.	Occasionally
Remembering	
Remembering spoken instructions.	Frequently
Remembering written instructions.	Frequently
Remembering visual information.	Continuously
Recalling information incidental to task at hand.	Continuously
Memorizing facts or sequences.	Frequently
Remembering simple instructions.	Continuously
Remembering detailed instructions.	Frequently
Learning & Processing	
Effectively learning and mastering information from classroom training.	Rarely
Effectively learning and mastering information from on-the-job training.	Frequently
Learning from past directions, observations, and/or mistakes.	Continuously
Using common sense in routine decision making.	Continuously
Recognizing and anticipating potential hazards and taking precautions.	Continuously
Thinking critically and making sound decisions.	Continuously
Integrating ideas and data for complex decisions.	Occasionally
Determining and following precise sequences.	Frequently
Coordinating and compiling data and information.	Frequently
Analyzing, synthesizing data and information.	Continuously
Tasking and Planning	
Performing repetitive or short-cycle work.	Occasionally
Working under specific instructions.	Continuously
Completing complex tasks.	Occasionally
Directing, controlling, or planning for others as necessary for basic tasks.	Occasionally
Directing, controlling, or planning for others as necessary for complex tasks.	Occasionally
Multi-tasking.	Frequently
Planning, prioritizing, and structuring daily activities.	Continuously



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Use Appropriate Behavior for Professional Work Environment	
Receiving criticism and accepting limits appropriately.	Frequently
Maintaining emotional control and organization under increased stress.	Occasionally
Maintaining socially appropriate affect, temperament, and behavior.	Continuously
Monitoring own quality of performance and altering behaviors to correct mistakes or improve outcome.	Continuously
Working independently and/or unsupervised.	Continuously
Adapting to frequent interruptions, changes in priorities, or changes in work location.	Frequently
Responding effectively to emergency situations.	Occasionally

Frequency Designations: Required Beneficial Not Necessary	
Maintaining Attendance and An Assigned Work Schedule	
Maintaining predictable and reliable attendance each work shift.	Required
Being punctual.	Required
Taking rest periods at set times or only at times determined by breaks in job responsibilities.	Not Necessary
Adjusting to a flexible schedule of work days and or shifts.	Required



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PHYSICAL DEMANDS

N/A: Not Applicable

S: Seldom (1-10% of the time)

O: Occasional (10-30% of the time)

STRENGTH: Sedentary Light

F: Frequent (30%-70% of the time)

C: Constant (Over 70% of the time)

WNL: Within Normal Limits (talking, hearing, etc.)

Medium Heavy Very Heavy

Frequency

Comments

Sitting	F	Utilizing desktop computer to monitor plant functions, completing paperwork such as daily log and log sheets, and talking on the phone. May sit on the floor while working on a specific project. Driving a vehicle in the immediate area of the IWTP, various field locations, or to the outside testing laboratory.
Standing	O	Gathering samples, processing and testing water samples, completing various maintenance, repair, and fabrication tasks, talking with coworkers and vendors, and accessing various files, binders, or catalogs.
Walking	F	Walking to and from various places in the IWTP to gather samples, conduct inspections, deliver water samples to courier, walking to adjacent shop/pump station building, and walking to and from truck at field locations. Walking may be over concrete, tile, asphalt, grass, dirt, mud, or uneven ground.
Lifting (up to 10 pounds)	F	Lifting sample jars and bottles (up to 1 gallon (8.5 lbs.)), water sample dipping stick, coolers with water samples, stopwatch, clipboard, paperwork, documents, logbook, telephone handset, 2-way radio, tools, keys, rakes and shovels, sections of pipe, smaller parts, components, and equipment, shop supplies, jars of chemicals, and PPE.
Lifting (10 to 100 pounds)	S	Lifting tool bags and boxes (15 to 35 lbs.), 5 gallon containers/buckets of chemicals and water (up to 50 lbs.), larger tools, ladders, motors, pumps, and other system components, sections of larger pipe, and fire hose. Note: Proactive efforts are encouraged to limit the amount of lifting required. Wheels are added to items to help eliminate the need to lift and carry items (such as on welding equipment), items are lifted onto a wheeled cart or into a truck, which is then used to transport items. Lifting devices (such as a forklift, overhead hoist, and crane) are used to lift heavy objects to mitigate lifting demands. On an infrequent basis, an Operator may need to lift a large valve or system component (up to 80 lbs.), reposition a miter bandsaw in the shop (approx. 100 lbs.), move a confined space blower (70 lbs.), assist with loading a generator into a truck (75 lbs. with team lift), or move a confined space hoist and winch (up to 100 lbs.).
Carrying (up to 10 pounds)	F	Carrying sample jars and bottles (up to 1 gallon (8.5 lbs.)), water sample dipping stick, coolers with water samples, stopwatch, clipboard, paperwork, documents, 2-way radio, tools, keys, rakes and shovels, sections of pipe, smaller parts, components, and equipment, shop supplies, jars of chemicals, and PPE.



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Carrying (10 to 100 pounds)	S	Carrying tool bags and boxes (15 to 35 lbs.), 5 gallon containers/buckets of chemicals and water (up to 50 lbs.), larger tools, ladders, motors, pumps, and other system components, sections of larger pipe, and fire hose. Note: Proactive efforts are encouraged to limit the amount of carrying required. Wheels are added to items to help eliminate the need to carry items (such as on welding equipment), items are transported on wheeled carts or trucks, and hand trucks and drum trucks are used to move items. On an infrequent basis, an Operator may need to carry a large valve or system component (up to 80 lbs.), a confined space blower (70 lbs.), a generator (75 lbs. with team lift), or a confined space hoist and winch (up to 100 lbs.) a short distance (5 to 20 feet) to a wheeled cart or truck.
Pushing/Pulling (Force up to 10 pounds)	F	Positioning sample testing equipment, opening/closing doors and drawers, gathering water samples, moving wheeled carts, hand trucks, and portable welding equipment, positioning and maneuvering various items on and off wheeled carts or hand truck, maneuvering sections of pipe, removing debris from various grates, raking, shoveling, sweeping, inserting/removing barrel pumps, using hand tools, and while operating various power tools such as a drill press, vices, etc. <u>Opening/closing gate to enter/exit parking area to meet courier.</u>
Pushing/Pulling (Estimated force 10 to 100 pounds)	S	Moving loaded wheeled carts and hand trucks, pulling 5-gallon water bottles from storage racks, maneuvering sections of pipe, connecting/disconnecting system components and equipment, operating a fire hose (2" hose), and positioning crane/hoist. Some chemicals are delivered to the IWTP in 55-gallon barrels that weigh up to 700 lbs. A drum truck is used to move and maneuver the barrels.
Climbing Stairs/Ladders	S-O	Stairs are used to access the top of the water processing equipment where samples are taken. Stairs are also used to reach the lower level of the pump station (below ground level). Ladders are used to complete work as needed, or access vaults.
Working at Heights/Balancing	S	Depends on assigned tasks. The IWTP has a number of overhead walkways used to access water sampling areas and system equipment and components. Ladders are used to complete work as needed, or access vaults. Note: Fall protection is worn as required.
Bending at Waist	F	Gathering water samples, gathering data from gauges or equipment at or below chest level, performing installation, maintenance, repair, fabrication, inspection, and monitoring tasks at or below chest level, working at a workbench in the shop, gathering parts, tools, and items stored at or below waist level, getting into/out of vehicle, and when picking up debris.
Bending Neck	C	Neck movements required in all assigned tasks.
Twisting at Waist	S	Depends on assigned tasks. Twisting may be necessary to reach particular work areas or system components, taking water samples, raking, shoveling, and sweeping debris, operating a hose, and positioning cranes/hoist. Note: Workers can minimize the amount of twisting by moving their feet or repositioning their bodies while working.



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Crouching/Kneeling	S	Depends on assigned tasks. When working in and around equipment or pipes, in confined spaces, working on equipment or items below waist level, or gathering parts and supplies stored below waist level. Workers may use kneepads while working.
Crawling	S	Depends on assigned tasks. May crawl to reach or move between work areas.
Stooping	S	Maneuvering in and around systems and components (particularly while walking on the catwalks in the IWTP), or while entering smaller/confined spaces.
Reaching (To shoulder level)	F	Gathering and processing water samples, using mouse to access data on computer, repairing and installing parts and equipment, performing fabrication and inspection tasks, climbing ladders, using a hand truck or drum truck, cleaning equipment, raking, shoveling, and sweeping, driving a vehicle, positioning crane/hoist, gathering parts, supplies, and other items stored below shoulder level, and using various office equipment. Note: Workers use ladders to try to position work at chest level when possible.
Reaching (Over the shoulder)	S	Repairing and installing parts and equipment, performing fabrication and inspection tasks, cleaning equipment, and gathering parts, supplies, and other items stored over shoulder level.
Driving	O	Driving a vehicle in the immediate area of the IWTP, various field locations, or to the outside testing laboratory.
Foot Controls	O	While driving.
Repetitive Motion	N/A	The variety of tasks assigned to IWTP Operators generally minimizes repetitive motion.
Handling/Grasping	C	50 % Pinch Grasp 50 % Whole Hand Grasp
Fine Finger Manipulation	F	Writing, using computer mouse to research status of remote system monitors, gauges, and systems, and operate HMI controls, processing water samples, using keys, loosening/tightening lids on sample jars and various containers, using stopwatch, using hand tools, operating controls on power tools and welding equipment, disconnecting/reconnecting system components, manipulating small parts/valves, dialing telephone, operating buttons on 2-way radio, and picking up/removing debris.
Keyboarding	O	Documenting completed projects, creating reports, and sending/receiving electronic mail.
Talking	F	Communicating with supervisors, co-workers, and vendors in person or via telephone or radio.
Hearing	C	Communicating with supervisors, co-workers, and vendors. When listening for sounds of malfunctioning machinery and alarms in and around work areas.
Seeing	C	Visual abilities would be considered important in this position.
Writing	O	Completing daily logs, and taking notes and messages.



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Normal Job Site Hazards	C	Working with chemicals, working at heights (ladders and overhead walkways), working in confined spaces, welding sparks, fire, moving machinery, sharp edges on parts, components, and tools, pinch hazards, working around low hanging equipment and pipes, working with heavy parts, exposure noise, dust, and fumes, and operating vehicles.
Expected Environmental Conditions	C	Operators work in the IWTP tank room, the attached office space, in a workshop/pump station building, or in the field. Worker would be exposed to external weather conditions when walking between buildings, to and from a vehicle in the field, delivering samples to a courier. Temperatures in the IWTP tank room, the attached office space, and workshop/pump station building, may be impacted by external temperatures.

The above job analysis represents the requirements of a specific job based on personal observations, discussions with employer representatives, and/or workers. On occasion, practicality and feasibility prevent the direct observation and/or gathering of objective quantifiable data. For this reason, a "best estimate" may have been used when reporting physical demand frequencies.

Analysis was done on the job site? Yes No

Job Analysis Reviewed By: Henry Maynard, Dan Hytry, and Dave Wells

Completed by Vocational Provider Brice York, B.A., CDMS

Date March 28, 2022

Signature of Vocational Provider 



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FOR PHYSICIAN'S/EVALUATOR'S USE ONLY

- The injured worker can perform the physical activities described in the job analysis and can return to work on _____
- The injured worker can perform the physical activities described in the job analysis on a part-time basis for _____ hours per day. The worker can be expected to progress to regular duties in _____ weeks/months.
- The injured worker can perform the described job, but only with the modifications/ restrictions in the attached report and/or listed below. These modifications/restrictions are (check one):
 - Temporary for _____ weeks _____ months
 - Permanent
- The injured worker cannot perform the physical activities described in the job analysis based on the physical limitations in the attached report and/or listed below. These limitations are (check one):
 - Temporary for _____ weeks _____ months
 - Permanent

COMMENTS:

Date _____ Physician's/Evaluator's Signature _____

Physician's/Evaluator's Name Printed _____

PLEASE RETURN COMPLETED FORM VIA FACSIMILE TO:

Port of Seattle Employee Health & Safety Department at (206) 787-3406