

# ADDRESSING BRAIN DRAIN IN PORTLAND, MAINE

SCOTT FIRMIN – DIRECTOR OF WASTEWATER OPERATIONS

CHARLENE POULIN – CHIEF OPERATOR WASTEWATER SYSTEMS

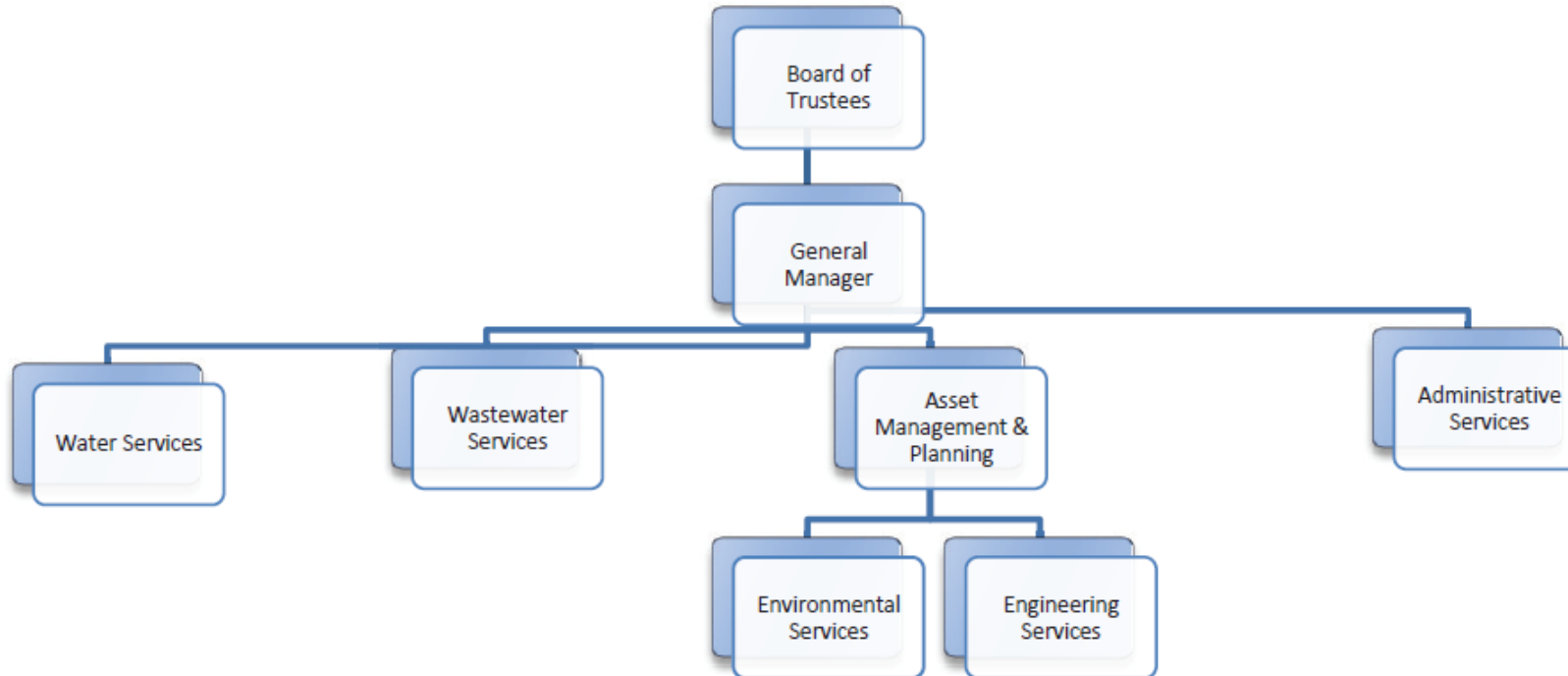
PORTLAND WATER DISTRICT



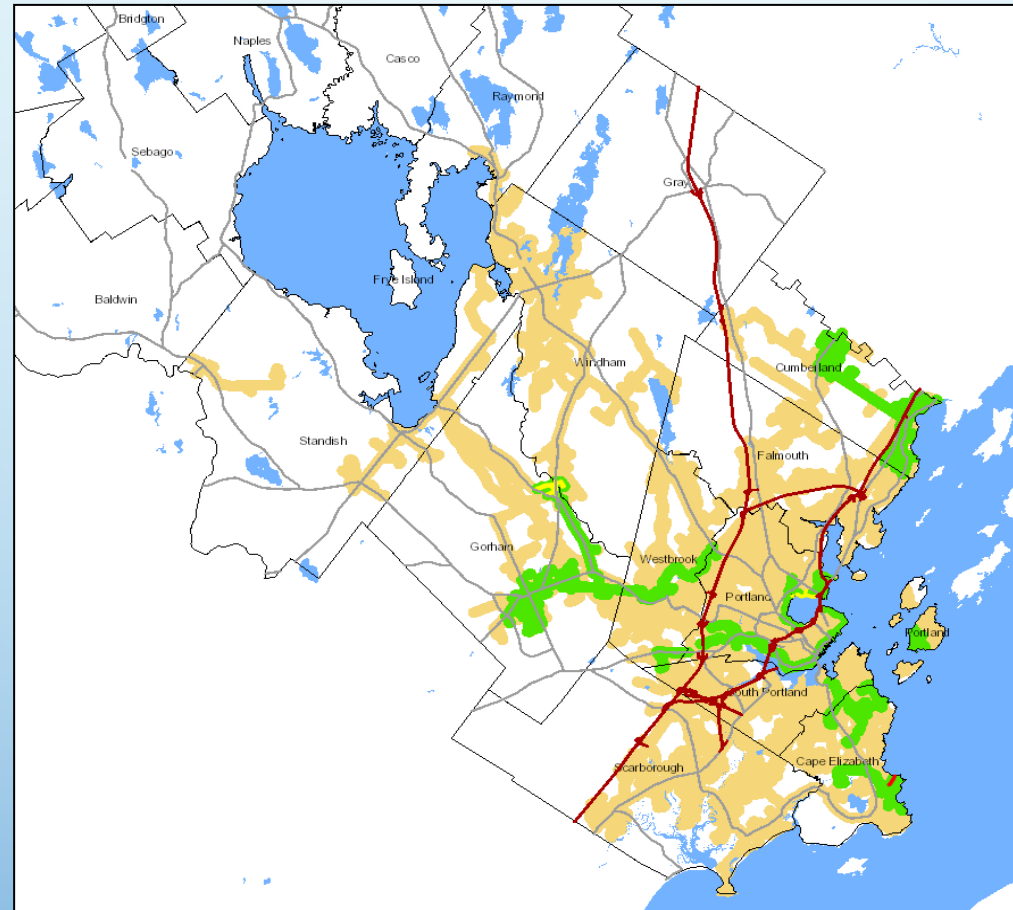
Portland Water District  
Portland, ME

## Organization Structure

The Portland Water District is overseen by an 11-person Board that is publically elected. The Board appoints a General Manager, who oversees the daily operation of the District. Operation is comprised of five departments – Water Services, Wastewater Services, Environmental Services, Engineering Services and Administrative Services.



# WHO IS PORTLAND WATER DISTRICT





# COLLECTION SYSTEM

- CAPE ELIZABETH
- CUMBERLAND
- GORHAM
- PEAKS ISLAND
- PORTLAND
- WESTBROOK
- WINDHAM



- 76 PUMP STATIONS
- JOINT OWNERSHIP IN SOME COMMUNITIES
- 36 COMBINED SEWER OVERFLOWS
- 91 MILES COLLECTION/INTERCEPTION
- 29 MILES FORCE MAIN

# MANAGING EXPERIENCE LOSS IN WW

- CHALLENGES:
  - RETIREMENTS
    - CLEAN WATER ACT (JOBS!)
  - MOVEMENT WITHIN THE COMPANY
  - JOB CHANGES OUTSIDE THE COMPANY
  - OPERATORS AND MANAGEMENT



# WHERE ARE WE GOING TO FIND PEOPLE?

- INTERNAL CANDIDATES
- EXTERNAL CANDIDATES
- EXPLICIT KNOWLEDGE
  - RULES, BEST PRACTICES, INFORMATION ABOUT A SKILL
- TACIT KNOWLEDGE
  - FOUND IN MINDS AND PRACTICES THROUGH TRIAL AND ERROR



# WHERE CAN WE START?

- FOCUS ON LONG-TERM WORKFORCE NEEDS
- RECOGNIZE TALENT EARLY
- CREATE INTEREST IN THE FIELD BY PARTICIPATING IN MENTORSHIP PROGRAMS
- EMPHASIZE MENTORSHIP PROGRAMS
- ATTEND CAREER FAIRS





# MANAGEMENT CANDIDATE SCHOOL



# WASTEWATER OPERATOR

- 39 FTE IN WASTEWATER SERVICES
- 3 “WASTEWATER OPERATOR” POSITIONS
  - TREATMENT AND COLLECTIONS OPERATOR LICENSE REQUIRED WITHIN 2 YEARS
  - WORKS IN EVERY AREA OF WASTEWATER SERVICES
    - TREATMENT - EAST END, WESTBROOK/GORHAM, CAPE ELIZ., PEAKS IS.
    - SYSTEMS
    - ASSET MANAGEMENT TRAINING
    - LAB - IMMERSION TRAINING / IPT LAB TRAINING



# IN THE BEGINNING

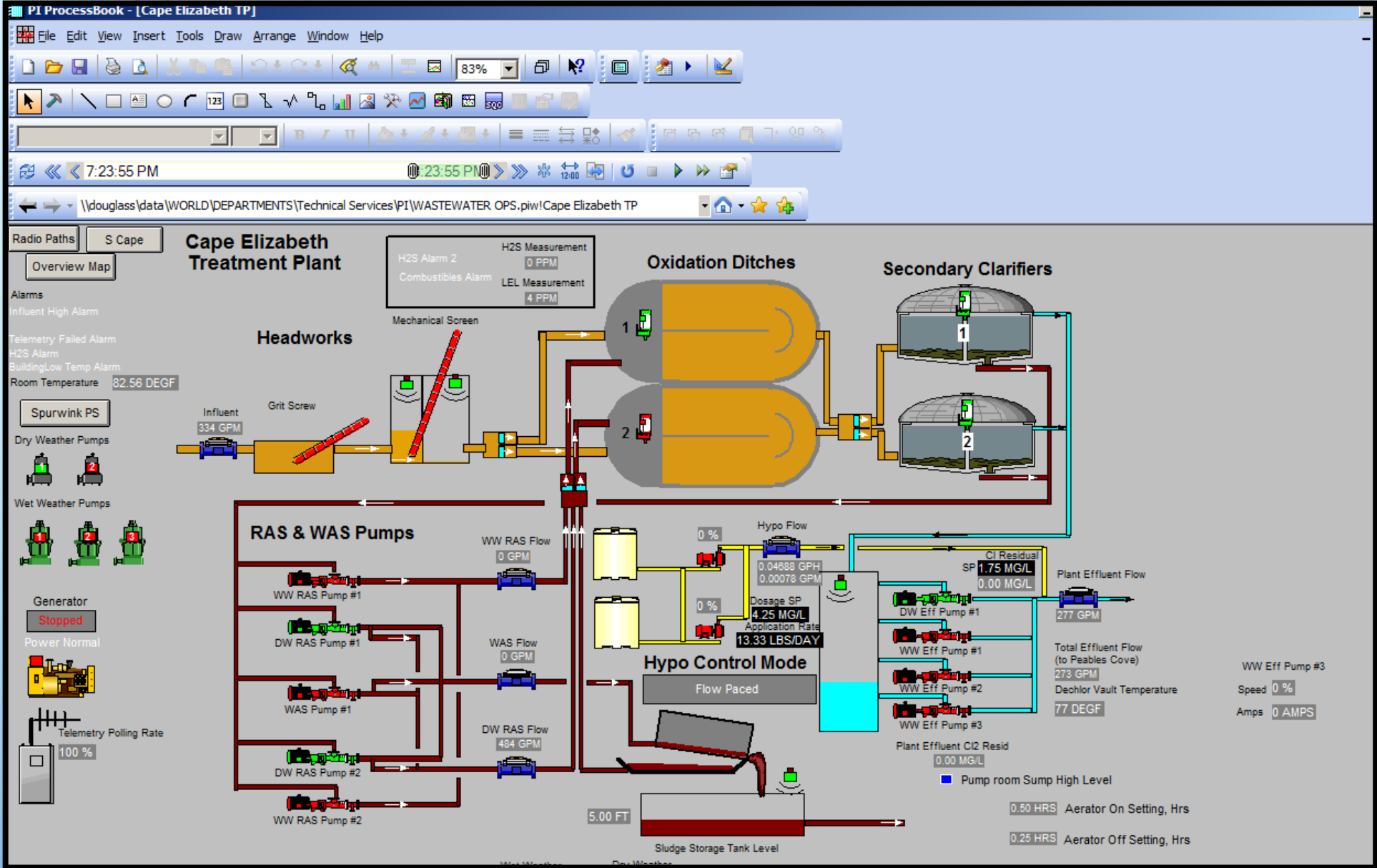
- EXTRA POSITION
- LEARNING POSITION
- USED AS A FILLER (AND/OR LABORER)
- CONSISTENCY IN TRAINING



# WASTEWATER TREATMENT

- THREE MONTHS CAPE, PEAKS, WESTBROOK
- THREE MONTHS EAST END
- GUIDE BOOKS FOR MINIMAL TASKS
- SHIFT WORK
- CROSS OVER WITH SYSTEMS





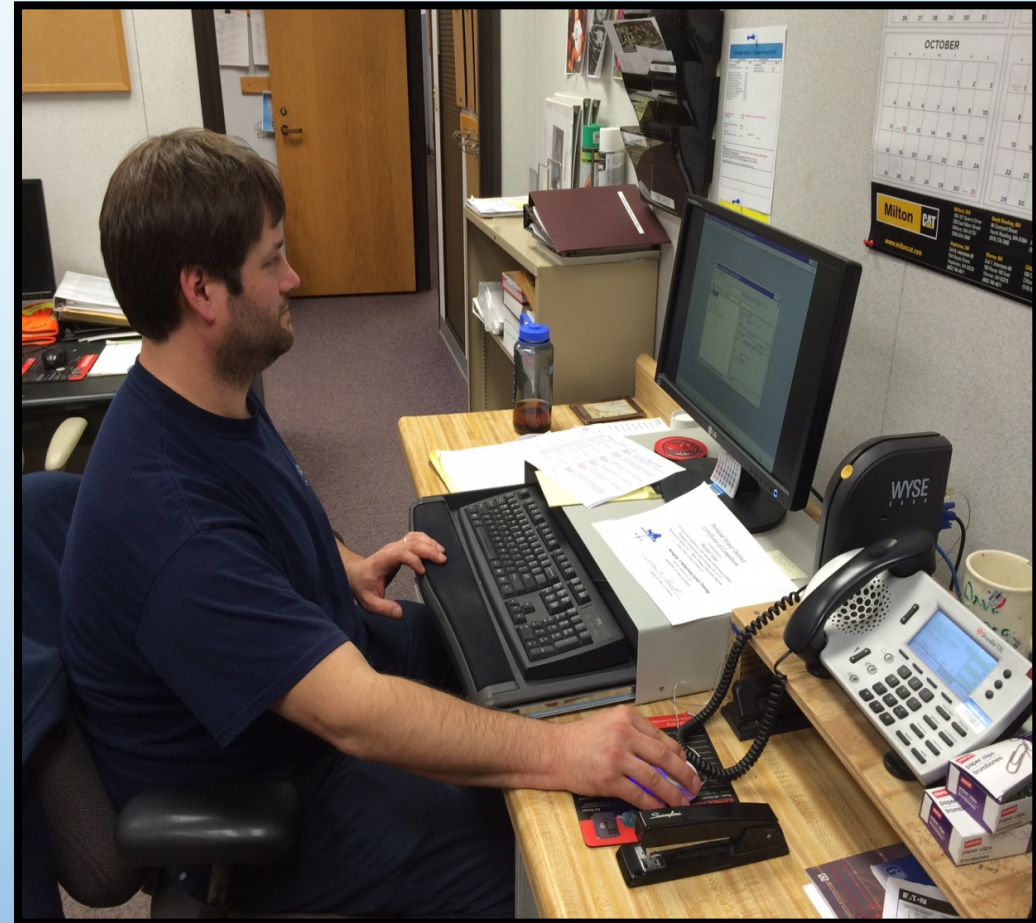
# WASTEWATER SYSTEMS

- COLLECTIONS
  - PUMP STATIONS/LINES
- INDUSTRIAL PRE-TREATMENT
- VACTOR – WET WELL LINE CLEANING
- DIG SAFE LOCATES
- EMERGENCY RESPONSE
- COMBINED SEWER OVERFLOWS
- INSPECTION



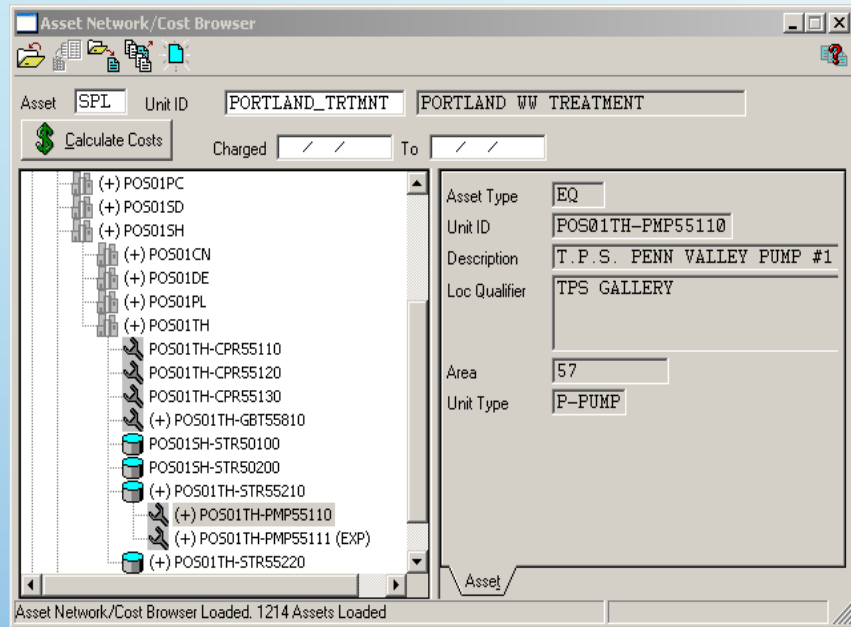
# AMAP – ASSET MANAGEMENT AND PLANNING

- ONE MONTH IN AMAP
- LEARNING IN DEPTH
- REVIEWS P&ID'S
- PROJECT LIAISONS
- OPERATIONS CONTACT
- SETS UP MAINTENANCE

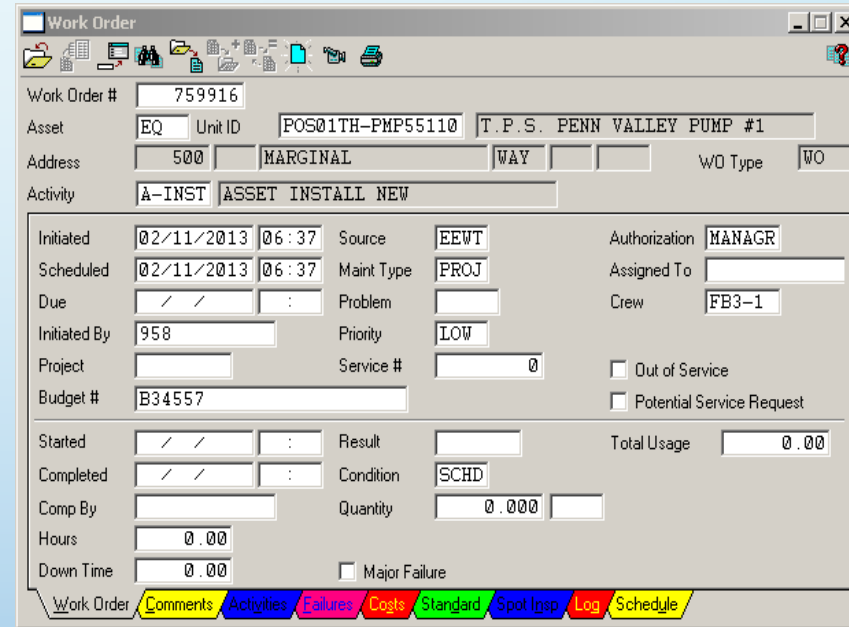


# MAINTENANCE

## IDENTIFY HANSEN ASSETS



## CREATE HANSEN WORK ORDERS





# LAB IMMERSION AND WATER OPS

	Day	Emphasis	Time	Staff	Task
Week 1	Orientation to Laboratory	Monday	8:00-9:00	Pete	Lab tour with emphasis on operator tests
			0930-1030		
	Introduction to PPE	Tuesday	8:00-9:00	Jim	review CHP, SDS, and hazards analyses (reading, discussion)
	Introduction to SDS and the CHP		0930-1030		
	Awareness overview of treatment process and key parameters (BOD, TSS, settleables, metal)	Wednesday	8:00-9:00	Susan	review why lab data is important for operational decisions
	Introduction to permit limit tabulations		09:15-1100	Rebekah	review permits for each plant
	Introduction to Digital Daily Sheet and Daily Effluent Report	Thursday	8:00-9:00	Jim	PWD Laboratory overview including certifications, QA/QC, powerpoint
	Intro to the sample-analyze-document cycle		0930-1030		Intro to lab bench/sheets/sample acceptance policy
		Friday	8:00-9:00	Rebekah	pH SOP and method read, discussion
First analysis: pH	0930-1000			watch scientist calibrate and perform QC, followed by independent calibration/QC	
Week 2	Overview and use of Sampling Plan	Monday	8:00-9:00	Paul	Sampling Plan powerpoint and quiz
	Tour of sample sites at East End		09:15-1130	Jim/Susan/Operator	Tour of east End sample locations
	Correct sampling techniques	Tuesday	8:00-9:00	Jim	Powerpoint on different sampling techniques and the QA/QC involved
	How to fill out a CDC and label		0930-1030		Discussion on labeling and correct preservation of samples/CDCs
	Awareness overview of microscopic analysis (filament types and causes) OR PIDA	Wednesday	8:00-9:00	Susan	Overview of analytical process, and then a review of how the data is used to make operational decisions
			09:15-1130		
	Overview of metals analysis	Thursday	8:00-9:00	Pete	Overview of analytical process and why metals analyses are needed (permit)
	Overview of oil and grease sampling		0930-1030	Abram	Overview of analytical process and why O&G analyses are needed (permit)
		Friday	8:00-9:00	Pete	Read SOPs and method, followed by observation of Pete conducting
	Second and third analysis: SS (All West and Inhoff) and chlorine residual		0930-1030		analyses (include both LR and HR)
		8:00-9:00	Jim/Susan/Operator	Use the W&M sampling plan as we move through the various sampling locations	



- Monday, 012119, 0730 Day 1: Tour of Lab (Pete, one hour)
- Tuesday, 012219, 0730 Day 2: Safety, PPE, and the CHP (Jim, 90 minutes)
- Wednesday, 012319, 0730 Day 3: QA/QC (documentation, sampling, COCs, etc) in the lab (Jim, 90 minutes)
- Thursday, 012419, 0730 Day 4: Data integrity and ethics (Jim, 60 minutes)
- Friday, 012519, 0730 Day 5: Overview of metals related to IPT (Pete, 30 minutes)
  - Overview of BOD/TSS related to IPT (Abram, 30 minutes)
- Thursday, 013118, 0730 Day 6: pH lecture, quiz (Jim, 45 minutes)
  - pH demonstration (Abram 45 minutes)
- Friday, 020118, 0730 Day 7: Hands-on with both instruments, obtain IDC (Abram and Jim, 120 minutes)

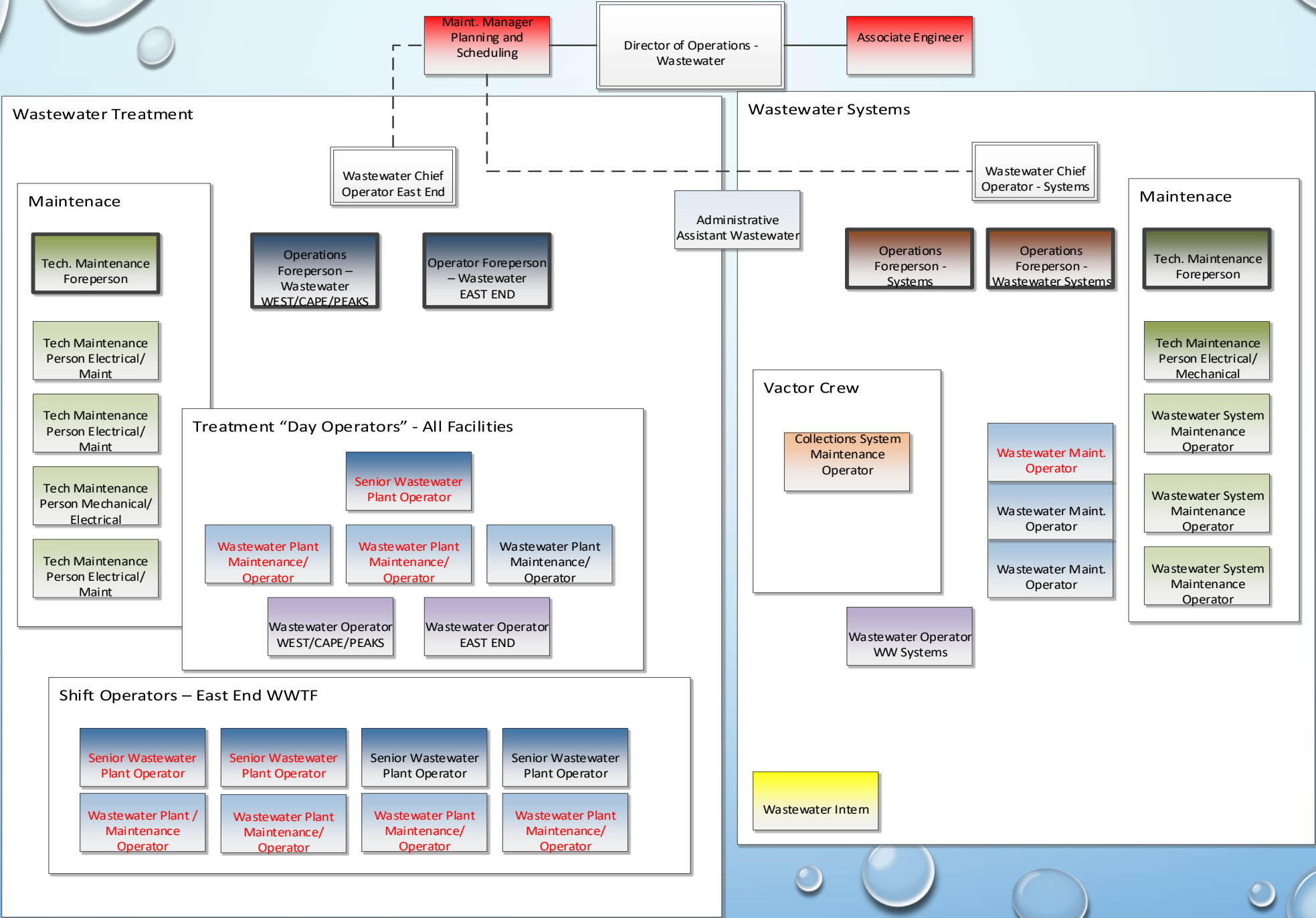
# WASTEWATER STUDY GROUP

- MONTHLY SESSIONS:
  - 2<sup>ND</sup> TUESDAY OF EACH MONTH
  - 1:00 PM AT THE EAST END CONF. ROOM
- FIRST MEETING – JANUARY 2016
- TOPICS
  - GENERAL WASTEWATER MATH AND EXAM PREPARATION
  - ACTIVATED SLUDGE OPERATION
  - PUMP STATIONS
  - COLLECTION SYSTEMS
  - NITRIFICATION/DENITRIFICATION
  - FIELD TRIPS – LAWPCA DIGESTER



Wastewater Treatment

Wastewater Systems



# PWD APPRENTICES – PAST AND CURRENT

- DAVE – WASTEWATER MAINTENANCE OPERATOR
- ISAAC – WORKS FOR FOURNIER INDUSTRIES
- GARY – RETIRED
- TIM – WASTEWATER MAINTENANCE OPERATOR
- MATT – WORKS FOR FALMOUTH TREATMENT PLANT
- MIKE – WASTEWATER MAINTENANCE OPERATOR
- RYAN – SENIOR WASTEWATER TREATMENT OPERATOR
- MATT P – SENIOR WASTEWATER OPERATOR
- BRANDON – WASTEWATER MAINTENANCE OPERATOR
- ZACK – WASTEWATER MAINTENANCE OPERATOR
- KEVIN – WASTEWATER MAINTENANCE OPERATOR
- CRYSTAL – SENIOR WASTEWATER OPERATOR
- CHRIS – CURRENT
- SCOTT – WATER OPERATOR (STILL AT PWD)
- JARET – MILLWRIGHT (PWD)
- ANDREW – WASTEWATER MAINTENANCE OPERATOR
- CHRIS K – ENVIRONMENTAL SCIENTIST (PWD)
- KAROL – LEFT PWD

# CURRENT CHALLENGES

- THE PACE OF CHANGE HAS INCREASED
- KNOWLEDGE SHARING SEEMS TO BE THROUGH OBSERVATIONS/VERBAL
- EXPECTATIONS ON THE WORK EXPERIENCE
- ORGANIZATIONAL/REGULATORY/PUBLIC EXPECTATIONS
- KNOWLEDGE MANAGEMENT
- CONSISTENT FORMAT FOR TRAINING – BOTH INITIAL AND ONGOING
- SATISFYING CHANGING NEEDS WITH EXISTING SYSTEMS
- MEETING THOSE EXPECTATIONS – THROUGH PERFORMANCE

# EVEN BIGGER CHALLENGES

- MAINTENANCE SKILLS – MECHANICAL, ELECTRICAL, OPERATIONAL
  - TRANSITION FROM PROJECTS AND REACTIVE TO PM DRIVEN
  - FEW PROGRAMS OR RELEVANT CERTIFICATIONS
    - VOCATIONAL/TECH PROGRAMS??
- CONSISTENCY – OPERATIONS, MAINTENANCE, TRAINING
- DOCUMENTATION

## NEXT STEPS

- ASSET MANAGEMENT SYSTEM CHANGE – OPPORTUNITY FOR WORK MANAGEMENT CHANGES
- DEVELOPING STANDARD OPERATING PROCEDURE PROGRAM
- FORMALIZE TRAINING PROGRAM
- NETWORKING WITH VOCATIONAL/TECHNICAL PROGRAMS
- BUDGET FOR OPERATIONAL INTERN POSITION

THANK YOU!

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