



WIMS NATIONAL USER CONFERENCE

Leveraging Power BI with WIMS

Mat Eckert | Implementation Manager
AQUATIC INFORMATICS | August 2024

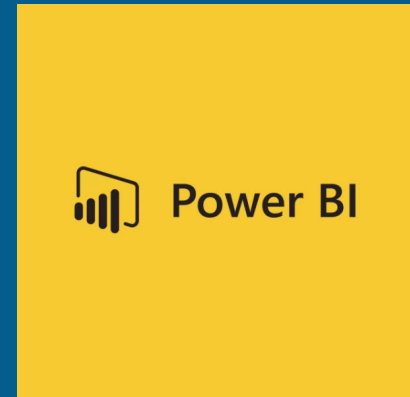




TODAY'S AGENDA

- What is Power BI
- Power BI Plans
- Connecting WIMS to Power BI
- Optimizing WIMS for better visuals
- Visualized WIMS data

WHAT IS POWER BI?



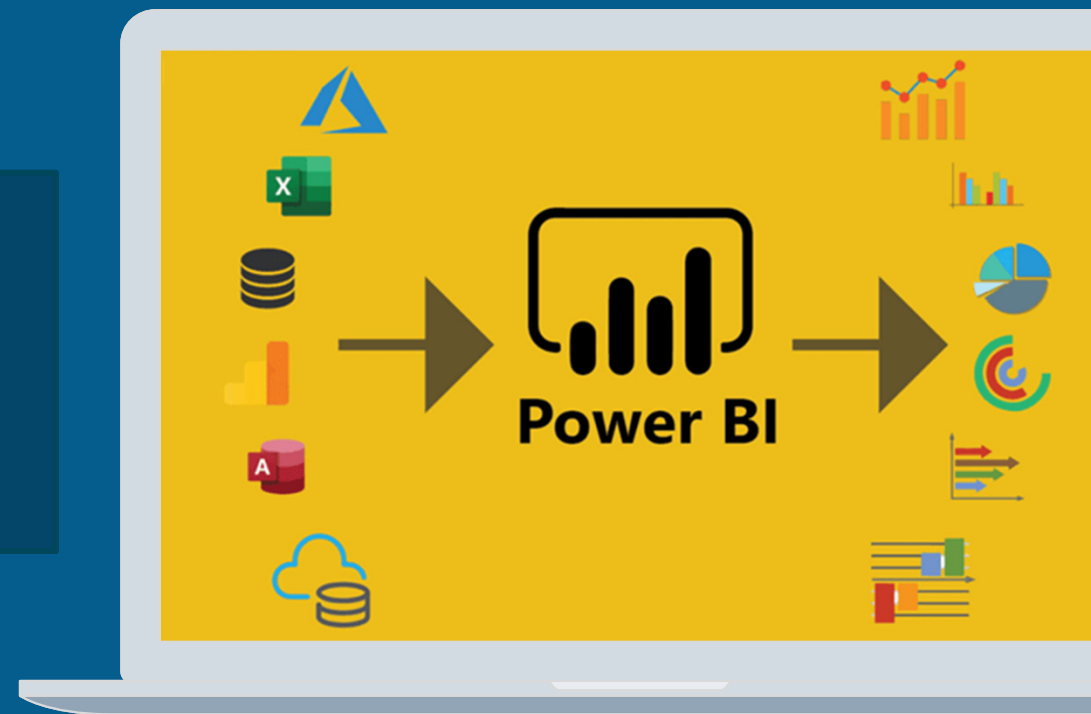
Microsoft Power BI is an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence



* Images collected from Google

POWER BI PLANS

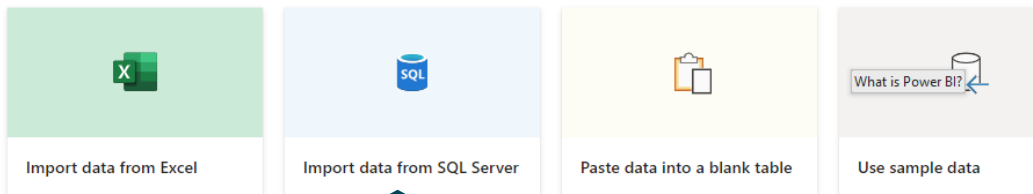
- Free
- Power BI Pro
- Power BI Premium Per User
- Power BI Embedded



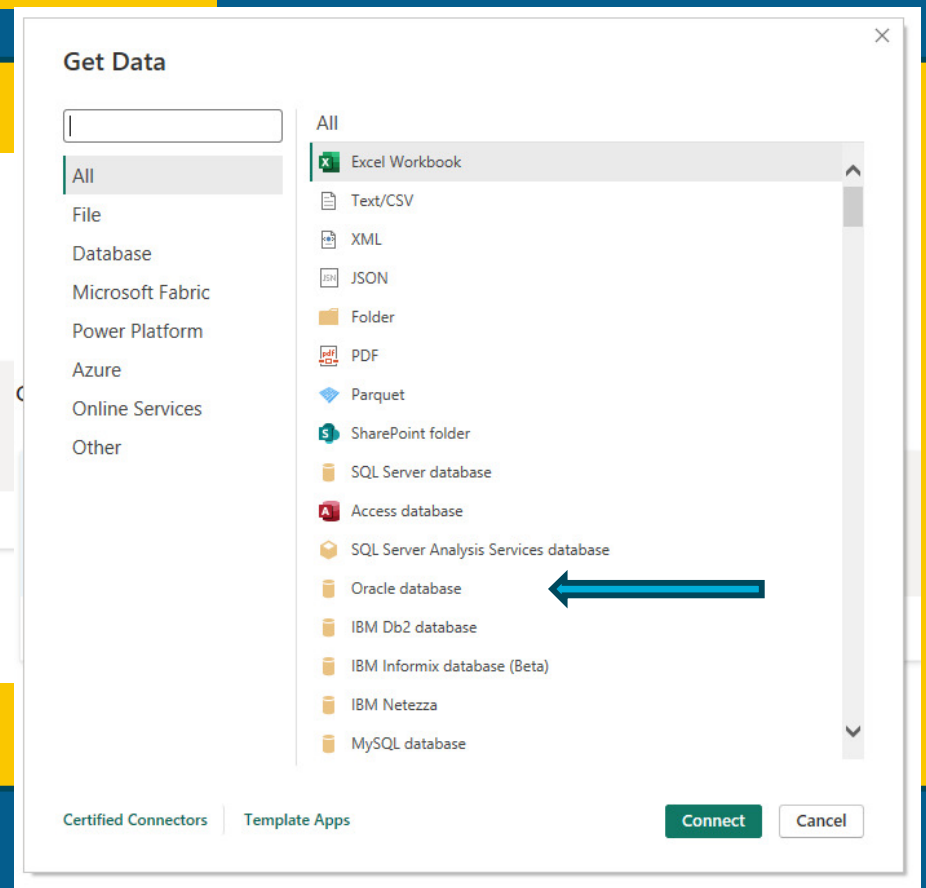
CONNECTING WITH SOURCES

Add data to your report

Once loaded, your data will appear in the **Data** pane.



data from another source →



SQL Server database

Server ⓘ

Database (optional)

Data Connectivity mode ⓘ

- Import
- DirectQuery

Advanced options

Command timeout in minutes (optional)

SQL statement (optional, requires database)

- Include relationship columns
- Navigate using full hierarchy

OK

Cancel

Navigator

Display Options ▾

vmt13939b\opssql: OPSYW [164]

- APPROVALFILTER
- APPROVALINI
- AREA
- AREA_J
- BIOSOILTEXTURE
- BOD
- BODCRIT
- BODRECS
- BODXREF
- CALCGRP
- CHART
- COLORS
- COMMENTS
- CSI_DR_META
- CSI_DR_SOURCES
- DATADD1
- DATADD1_AT
- DATADD1_C
- DATADD1_C_AT

No items selected for preview

Select Related Tables

Load

Transform Data

Cancel



DATATBL - Stores the daily frequency data for variables with a VarType of C, T, P, and Z.
DATADDH - Stores the hourly frequency data for variables with a VarType of H, N, and B.
DATADD4 - Stores the 4 hour frequency data for variables with a VarType of 4,G, and E.
DATADDF - Stores the 15 Minute frequency data for variables with a VarType of F,V, and X.
DATADD3 - Stores the 30 Minute frequency data for variables with a VarType of 3,W, and Q.
DATADD5 - Stores the 5 Minute frequency data for variables with a VarType of 5, Y, and R.
DATADD1 - Stores the 1 Minute frequency data for variables with a VarType of 1, S, and A.

[Knowledge Base article on DB structures](#)



JOINING TABLES

Append

Concatenate rows from three or more tables into a single table.

Two tables Three or more tables

DATADDF_C
DATADDH
DATADDH_C
DATATBL
LOCATION
LIMITS
LOGBOOK
LOGBOOKENTRIES
VARDESC

Add >>

COMMENTS
DATADD1_C
DATADD3_C
DATADD4_C
DATADD5_C
DATADDF_C
DATADDH_C

OK Cancel

Query Settings

PROPERTIES

Name
AllComments

All Properties

APPLIED STEPS

Source *

Data

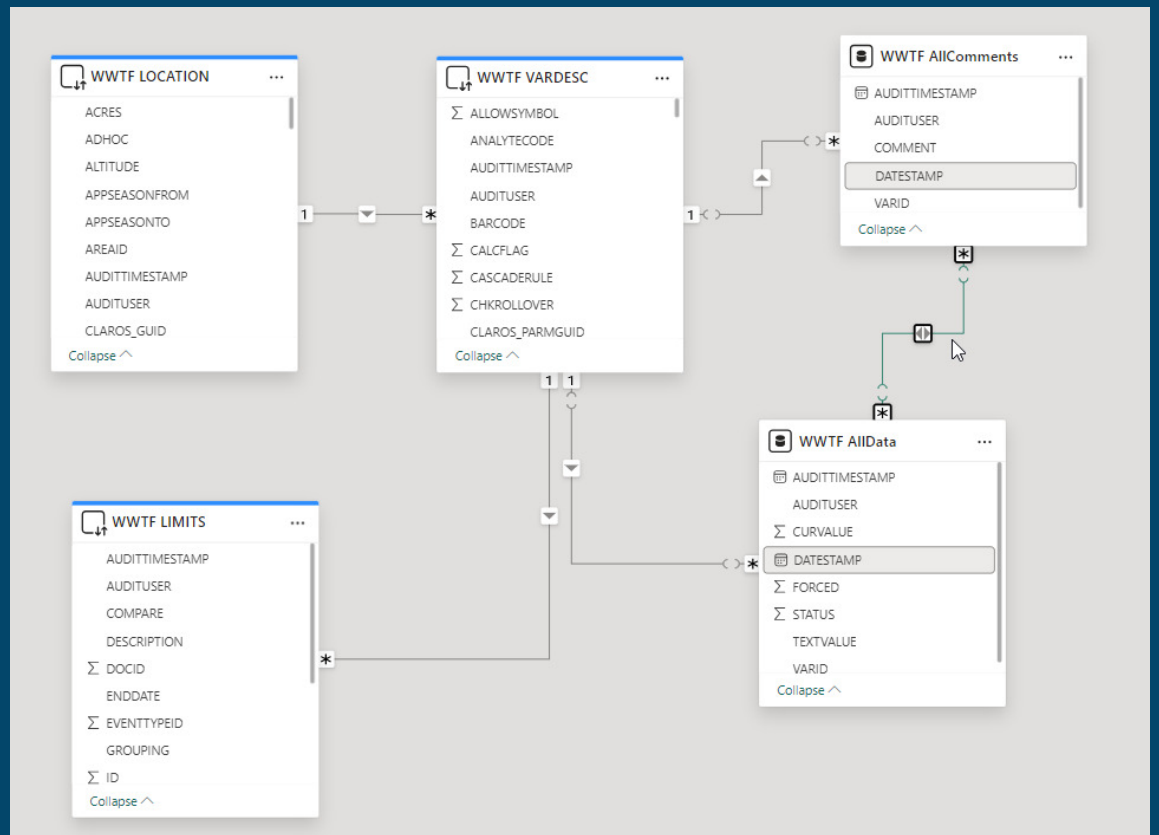
Search

- > COMMENTS
- > DATADD1
- > DATADD1_C
- > DATADD3
- > DATADD3_C
- > DATADD4
- > DATADD4_C
- > DATADD5
- > DATADD5_C
- > DATADDF
- > DATADDF_C
- > DATADDH
- > DATADDH_C
- > DATATBL
- > LIMITS
- > LOCATION
- > LOGBOOK
- > LOGBOOKENTRIES
- > VARDESC

RELATIONSHIPS

TIP:

Be sure to set the correct type of relationship. (1:1, 1:*, *:1, **)



ADD VISUALS TO REPORT

TIP:

Optimized vs not optimized

LOCATION	Online Chlorine Residual	pH	Temperature	Total Daily Flow
Airport Rd Booster	4	7.63	65	0.07
Berlin Rd Booster	4	7.86	60.9	0.1
Bull Rd Booster	4	6.31	44	0.08
Florida Ave Booster	4	6.96	47.2	0.1
Green Valley Booster	4	6.86	53.2	0.09
Haines Acres Booster	4	7	62.5	0.06
Hametown Booster	3.9	6.83	57.4	0.09
Hellam Booster	3.9	7.7	62.4	0.06
Irishtown Booster	4	6.28	47.1	0.05
Loganville Booster	4	7.76	56.7	0.06
Longtown Booster	3.9	6.12	56.8	0.08
Mt Zion Rd Booster	4	7.03	50.1	0.06
Norhtwest Booster	4	6.29	48.9	0.09
North Point Dr Booster	4	7.67	53.9	0.09
North York Booster	4	6.81	59.5	0.07
Oak Street Booster	4	6.79	61.3	0.08
Penn Oaks Booster	4	7.41	47.5	0.07
Pleasureville Booster	4	6.66	56.2	0.05
Shunks Hill Booster	4	6.91	47	0.06
Southern Repump Booster	4	7.52	57.6	0.1
Spring Grove Booster	4	7.43	63.7	0.05
Starview Booster	4	6.86	60	0.08
W Manheim Booster	3.9	6.01	44.2	0.08
West Manchester Booster	4	7.83	58.4	0.09
York New Salem Booster	4	7.02	58.5	0.06

NAME	Eff.	PC Influent	PC Influent Grab
Blank Alkalinity		-9.9	
Blank Ammonia HR		9.59	
Blank Ammonia LR		21.500	
Blank COD		-8	
Blank Nitrate HR		9.02	
Blank Nitrate LR		7.210	
Blank Nitrite		0.312	
Blank NO2+NO3 (TKN)		4.050	
Blank TKN		0.349	
Blank TKN (TKN)		6.720	
Blank Total Nitrogen (TKN)		6.950	
Blank TSS		-6.6	
Blank TSS RL		1.0	
Eff BOD (daily Avg)	92		
Eff Clarity	Washout		
Eff Fecal Coliform Geo Mean	999998.9999999998		
Eff Flow Weekly Average	60.0157142857143		
Eff Nitrate-Nitrite Loading Wkly Avg (R)	877.7433		
Eff Plant Effluent Flow (hourly)	9.42		

ADD SLICERS

TIP:

Slicers are dynamic filters for report users to interact with visuals

NAME	LOCATION		
<input type="checkbox"/> Blank Alkalinity	Aeration Basins	Eff.	Lab Chemicals
<input type="checkbox"/> Blank Ammonia HR	Bio-Solids	Eq Basin	Plant
<input type="checkbox"/> Blank Ammonia LR	Budgetary	Hq test	Primary
<input type="checkbox"/> Blank COD	CMMS	Influent	Process Control
<input type="checkbox"/> Blank Nitrate HR	DAF	IPP	Pump Stations
<input type="checkbox"/> Blank Nitrate LR	Dewatering	IPP vars	Secondary
<input type="checkbox"/> Blank Nitrite	Digesters	Lab	Toxicity
<input type="checkbox"/> Blank NO ₂ +NO ₃ (TKN)			
<input type="checkbox"/> Blank TKN			

DATESTAMP

2/22/2016 6/13/2016

Year Month Day

2024 April 1 31

LOGBOOK PBI



DATESTAMP

2/22/2016 6/13/2016

LOGBOOKNAME

CMMS Log	Disinfection	Train 1
Dewatering	DMR Logbook	Train 2
Digesters	Operations	WIMS Admin Changelog

DATESTAMP	COMMENT
3/12/2016 12:00:00 AM	WAS was changed per LO
3/3/2016 12:00:00 AM	Updated Variables 26006, 27016, 30016 to the correct MVAVG formula.
3/13/2016 12:00:00 AM	TS well #2 was getting high. worked to restore flow through #3 ts pump. opened sample line at the basin and bled air while flushing the suction line at the pump. Flow restored and pump b down properly.
	Continuing to monitor through the day [No Title]
2/23/2016 12:00:00 AM	T2 RAS pump #2 Low Seal Water
	There was seal water at the packing. cracked open seal water valves at the wall a bit more and pump appears to be functioning normally.
	1749 UPDATE: no further issues today
4/11/2016 12:00:00 AM	T2 DAF TS Well 3&4 indicator not operating properly. Have to skim and run TS pumps manually.
4/19/2016 12:00:00 AM	Summary: Maintenance completed work on DAF basin #2 today, but the Disconnect downstairs for the bottom heavy sludge collector is 'hard wired' so must be controlled from upstairs to lock out. Th screw conveyor still needs to be replaced as well. #6 Primary pump is being used to pump Primary Clarifier #2 #1 DAF basin collector/conveyor cycle time has been reset to 1/25 as the flights were dragging on the blanket Per Maintenance #4, #6 primary basins are ready. Flights on #3 primary basin are misalligned - LO/Maint are aware -maintenance to check out primary pumps 2&4 prior to dropping basin.

GRAPHING

TIP:

Notice the not optimized variable names.



LOCATION

Aeration Basins	Eff.	Lab Chemicals
Bio-Solids	Eq Basin	Plant
Budgetary	Hq test	Primary
CMMS	Influent	Process Control
DAF	IPP	Pump Stations
Dewatering	IPP vars	Secondary
Digesters	Lab	Toxicity

NAME

Eff Chemical Oxygen Demand	Effluent BOD Columbia Lab (R)	Effluent Total P Loading (R)
Eff Clarity	Effluent BOD Greenville Lab (R)	Effluent TRC (R)
Eff Fecal Coliform Geo Mean	Effluent BOD loading (R)	Effluent TRC Loading (R)
Eff Nitrite	Effluent D.O (R)	Effluent TRC non-detects (R)
Eff Plant Effluent Flow (hourly)	Effluent Fecal Coliform Coliier...	Effluent TSS % Removal (R)
Eff R1 Sod Hypochlorite dosage	Effluent Fecal Coliform non-det...	Effluent TSS (R)
Eff R2 Sod Hypochlorite dosage	Effluent Nitrate-Nitrite (R)	Effluent TSS Loading (R)
Eff Sod Bisulfite Dosage	Effluent Nitrate-Nitrite Loading (R)	Effluent UOD Lab ID
Eff Sod Bisulfite level (S)	Effluent pH	Effluent UOD loading (R)

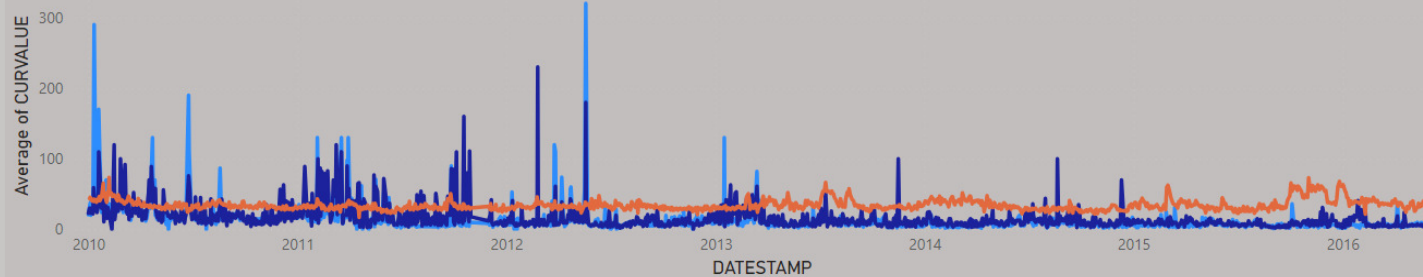
Year

2010	2013	2015	2017	2019	2021
2011	2014	2016	2018	2020	2022
2012					

Month

January	April	July	October
February	May	August	November
March	June	September	December

NAME ● Eff TSS (daily ave) ● Effluent BOD (R) ● Plant Effluent Flow (R)



WW VALUES



- NAME
- Blank Alkalinity
 - Blank Ammonia HR
 - Blank Ammonia LR
 - Blank COD
 - Blank Nitrate HR
 - Blank Nitrate LR
 - Blank Nitrite
 - Blank NO2+NO3 (TKN)
 - Blank TKN

LOCATION

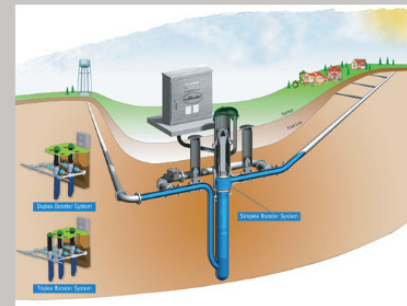
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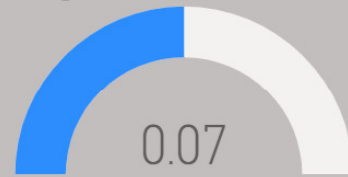
DW VALUES



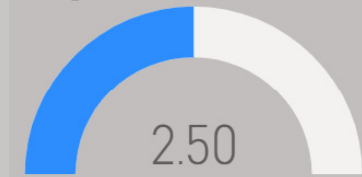
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Irishtown Booster	4	6.28	47.1	0.05
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Longstown Booster	3.9	6.12	56.8	0.08
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Norhtwest Booster	4	6.29	48.9	0.09
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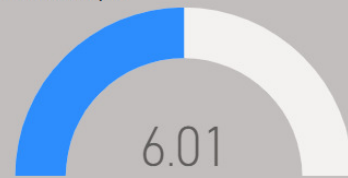
Average Flow



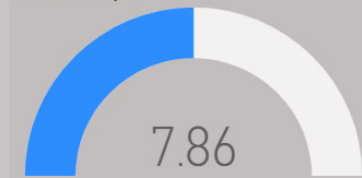
Average Cl2



Minimum pH

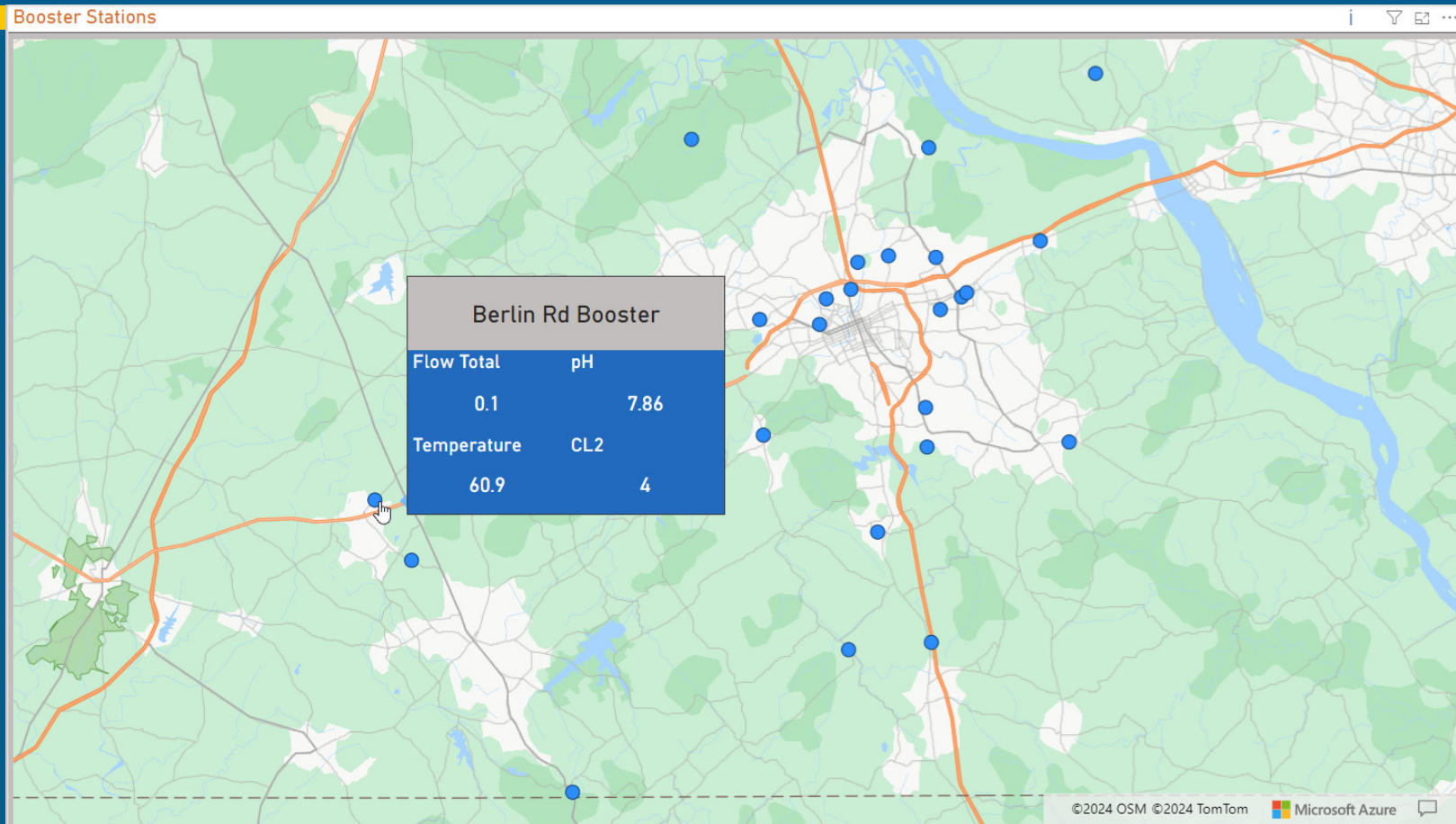


Maximum pH



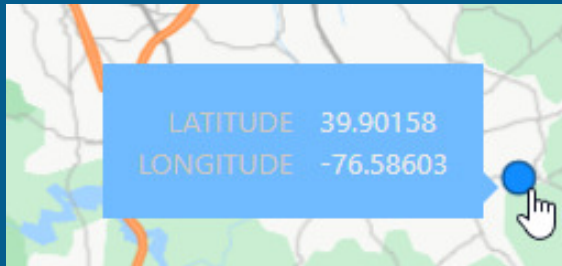
Year: 2024 | Month: April | Day: 1 to 31

MAP w/ TOOLTIP POPUP



TOOLTIP POPUP

Default



TIP:

Create custom popup as a report page

Report page

701	
Flow Total	pH
0.1	7.86
Temperature	CL2
65	4

THANKS!

ANY QUESTIONS OR COMMENTS?

AQUATIC INFORMATICS

Mat Eckert | meckert@aquaticinformatics.com

