

Central Plymouth County Water District Commission

Minutes of Tuesday, June 27, 2023, ZOOM Meeting

The meeting took place via Zoom video/teleconference due to current COVID-19 social distancing recommendations issued by Governor Maura Healey.

Quorum was reached with three Commissioners voting in affirmative, roll call vote: Commissioner Biechler – yes, Commissioner Egerton – yes, and Chair O’Leary – yes. Three in the affirmative, the meeting began at 12:03 PM. Chair O’Leary stated that the meeting would be recorded for posting on the website at www.CentralPlymouthCountyWater.org

Meeting attendees identified included Al DeGirolamo from Senator Brady’s office; Kamiya Parkin Policy and Intergovernmental Affairs Associate from Mayor Sullivan’s office; Don Howard from the Hanson Water Committee; Joanne Zygmunt from OCPC; Pine duBois from the Jones River Watershed Association; Charles Matthewson from WATD; Bernadette Kolb; Stephanie Martin; Jimmy Powell, Jeremy Gillespie, and Nathan Hedberg. Kimberly Graff of Groff Associates and Matthew Ladewig from TRC Inc, also attended. Frank Basler, Plymouth County Administrator, attended and took minutes.

Commissioner Egerton moved to accept the minutes of March 28, 2022. Seconded by Commissioner Biechler. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – yes. Motion passes 3 – 0.

Frank Basler gave an overview of the Finance Report. The May 31, 2023 bank balance was \$172,841.07 (see attached Finance Report).

Commissioner Egerton made a motion to approve payment of the below TRC invoices and the Groff invoice. Commissioner Biechler seconded the motion. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – yes. Motion passes unanimously.

- TRC inv # 585683 4/20/23 \$36,777.10
- TRC inv # 595077 6/14/23 \$1,870.00
- Kimberly Groff Consulting inv # 0006 \$5,400.00

Kim Groff introduced Matt Ladewig who gave an update on the draft report of the Silver Lake Water Quality Report completed by TRC. He presented the attached slides to bring a common understanding of the project. The slide presentation is posted on www.centralplymouthcountywater.org.

The full presentation is recorded on the website under the projects tab.

In Conclusion the below were the key takeaways

- Silver Lake appears to be facing multiple management issues, several of which rise to the level of water quality impairments.
- These impairments impact aquatic life and present a challenge to future use of Silver Lake as a public water supply.
- Excessive nutrients are associated with many of these impairments, particularly phosphorus.
- Modeling suggests that internal loading from the sediments is now the primary source of phosphorus to Silver Lake.
- Diversions were the primary external source of nutrients but the relationship with in-lake water quality maybe complex.

Further the draft suggested the following actions:

- An appropriate management response needs to be developed and implemented to address current impairments and future risks.
- Localized actions may help to ensure the quality of raw and finished water from the point of the potable water intake to the distribution system but a large-scale approach will be needed to fully address the observed issues on a broader basis.
- Ongoing monitoring is recommended to track water quality, water quantity, and ecological trends.
- Additional modeling could be used to evaluate the effectiveness of alternative management scenarios.
- Ultimately, need to develop a comprehensive management plan for Silver Lake that encompasses the critical components of management.

Discussion and questions followed. Commissioner Egerton moved to post the Draft Report and the slides on the CPCWDC website for public review, seconded by Commissioner Biechler. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – yes. Motion passes unanimously. Also, the Commissioners would like Ms. Groff to draft a press release concerning the Report and this will be discussed at the next meeting.

Kimberly Groff presented a scope of work, attached, to continue her work with the CPCWDC in a new capacity. Commissioner Biechler moved to move ahead with the SOW with Ms. Groff, seconded by Commissioner Egerton. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – yes. Motion passes unanimously.

Ms. Zygmunt stated that OCPC received approval for the Federal grant and they have signed the grant contract for the OCPC Water Supply Study. The OCPC will be moving ahead with formation of a Steering Committee and additional actions in the near future. More information will be coming soon.

Frank Basler gave an update on the hydro dredge: Keene Engineering has received delivery of the important pump that has been back ordered by the manufacturer for over 8 months. Keene will let us know when the dredge is being shipped across the country.

The next regularly scheduled meeting will on Tuesday, July 25th at noon.

Meeting adjourned at 1:30 P.M. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary– yes. Motion passes unanimously.

Submitted by Frank Basler

Attachments: agenda for June 27, Minutes for March 28, Financial Update, TRC invoices, Groff invoice, Groff Scope of Work, and TRC update PP

CENTRAL PLYMOUTH COUNTY
WATER DISTRICT COMMISSION

44 OBERY STREET, PLYMOUTH, MA 02360

WWW.CENTRALPLYMOUTHCOUNTYWATER.ORG



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LAURA BIECHLER, BROCKTON
LBIECHLER@PLYMOUTHCOUNTYMA.GOV

ART EGERTON, PEMBROKE
AEGERTON@PLYMOUTHCOUNTYMA.GOV

NOTICE OF MEETING

DATE & TIME: **Tuesday, June 27, 2023, 12:00 pm**

MEETING LOCATION: **Zoom video/Teleconference**

This meeting notice is being filed and posted in each city or town within the Central Plymouth County Water District, pursuant to General Law Chapter 30A, Section 20. Said notice and agenda must be filed in the offices of the city and town clerks within the District **at least 48 hours** prior to such meeting. Such filing and posting shall be the responsibility of the officer calling the meeting.

Join Zoom Meeting <https://us06web.zoom.us/j/88178651023> Meeting ID: 881 7865 1023

Dial by your location 646.876.9923 US Meeting ID: 881 7865 1023

AGENDA

Meeting opening

Approval of minutes: Tuesday, March 28, 2023

Finance report and invoice approval:

TRC inv # 585683	4/20/23	\$36,777.10
TRC inv # 595077	6/14/23	\$1,870.00
Kimberly Groff Consulting	inv # 0006	\$5,400.00

Discussion of TRC Silver Lake Water Quality Study Report draft – Matthew Ladewig and Kimberly Groff

Scope of Service for Kimberly Groff

Update on Old Colony Planning Council Water Study

Update and discussion on the timeline of hydro dredge

Other business not anticipated by Chair

Adjourn

Posted on Thursday, June 21, 2023, at 10:00 am at each of the eight Clerk's offices listed below and the County web site at www.plymouthcountyma.gov

Central Plymouth County Water District Commission

Minutes of Tuesday, March 28, 2023, ZOOM Meeting

The meeting took place via Zoom video/teleconference due to current COVID-19 social distancing recommendations issued by Governor Charles Baker.

Quorum was reached with three Commissioners voting in affirmative, roll call vote: Commissioner Biechler – yes, Commissioner Egerton – yes, and Chair O’Leary – yes. Three in the affirmative, the meeting began at 12:00 PM.

Meeting attendees identified included Al DeGirolamo from Senator Brady’s office; Jason Cullinane from Senator Moran’s office, Kamiya Parkin Policy and Intergovernmental Affairs Associate from Mayor Sullivan’s office; Don Howard from the Hanson Water Committee; Joanne Zygmunt from OCPC; Bill Napolitano from SRPEDD; Pine duBois from the Jones River Watershed Association; Matt Panella from the Kingston Conservation Committee; Charles Matthewson from WATD; Bernadette Kolb; Stephanie Martin; and Nathan Hedberg. Kimberly Graff of Groff Associates and Matthew Ladewig from TRC Inc, also attended. Frank Basler, Plymouth County Administrator, attended and took minutes.

Chair O’Leary opened the annual reorganization of the Commission asking for nominations for Chair from the other Commissioners. Commissioner Egerton nominated Chair O’Leary to continue as Chair. This was seconded by Commissioner Biechler. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – yes. Motion passes unanimously.

Commissioner Egerton moved to accept the minutes of January 24, 2022. Seconded by Commissioner Biechler. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – present. Motion passes 2 – 0 – 1.

Frank Basler gave an overview of the Finance Report. The February 28, 2023, bank balance was \$304,068.00 (see attached). A check for \$225,000 was cut for the OCPC as part of a Federal grant per the Commissioners vote last meeting. DCR will be sending the FY ’23 earmark payments of \$100,000 to the County soon. There were no questions raised.

Commissioner Egerton made a motion to approve payment of the below TRC invoice. Commissioner Biechler seconded the motion. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O’Leary – yes. Motion passes unanimously.

- TRC invoice 575987 dated February 20, 2023, for \$4,655.30
- TRC invoice 580099 dated March 16, 2023, for \$1,665.30

Kim Groff introduced Matt Ladewig who gave an update on the progress of the TRC project. He presented the attached slides to bring a common understanding of the project for the new Commissioners and all on the Zoom. The slide presentation is posted on www.centralplymouthcountywater.org. A schedule for future deliverables will be released in the near future.

Don Howard asked if any cyanobacteria was present in Silver Lake and Mr. Ladewig said there was.

Ms. Zygmunt asked what the process will be moving forward with the release of the report. The Commissioners thought they would release the report and set up public listening sessions along with a takeaway leaflet with key messaging from the information. Ms. Groff agreed and shared that there will be a document of the collected data that will be released with the report.

Ms. duBois stated that this is great news for the region and is looking forward to the release of the model from TRC. She gave her thanks for the project.

Ms. Zygmunt stated that OCPC did get an informal approval for the Federal grant with a potential kickoff for the 17 municipalities, stakeholders, and other interested parties that would help with the development of a scope for an RFP. The grant will focus on water supply and quality.

Frank Basler gave an update on the hydro dredge: Keene Engineering is still waiting on the delivery of an important pump that has been back ordered by the manufacturer. Keene will let us know as soon as the pump is available. The Department of Fish and Game management contract will be posted on the CPCWDC website.

Ms. duBois stated that the Jones River annual fish and eel count is starting April 1 and asked about management about the sluiceway. She also asked if the diversion is on and if so, then why. The Chair stated that he understood the diversion is not on now but will reach out to Jonathan Hobill, MA DEP. Commissioner Egerton made a motion to designate Commissioner Biechler to set up a meeting with Ms. duBois, Patrick Hill, of the City of Brockton DPW, and Ms. Parkin from Mayor Sullivan's office to assist with the fish count logistics. Biechler seconded the motion. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O'Leary – yes. Motion passes unanimously.

The next regularly scheduled meeting will on Tuesday, April 25th at noon.

Meeting adjourned at 1:12 P.M. Roll call vote: Commissioner Biechler – yes; Commissioner Egerton – yes, and Chair O'Leary – yes. Motion passes unanimously.

Submitted by Frank Basler

Attachments: agenda for March 28, Financial Update, TRC invoices, and TRC update PP

CENTRAL PLYMOUTH COUNTY
WATER DISTRICT COMMISSION

44 OBERY STREET, PLYMOUTH, MA 02360

WWW.CENTRALPLYMOUTHCOUNTYWATER.ORG



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NOTICE OF MEETING

DATE & TIME: **Tuesday, March 28, 2023, 12:00 pm**

MEETING LOCATION: **Zoom video/Teleconference**

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Join Zoom Meeting <https://us06web.zoom.us/j/87457666101> Meeting ID: 874 5766 6101

Dial by your location +1 646 876 9923 US or +1 646 931 3860 US Meeting ID: 874 5766 6101

AGENDA

Meeting opening

Annual Reorganization of Commission, note that Commissioner Egerton was reappointed as a Commissioner at the March 20 Advisory Board meeting for three-year term, expiring February 2026.

Approval of minutes: Tuesday, January 24, 2023

Finance report and invoice approval

Discussion of TRC Silver Lake Water Quality Study results – Matthew Ladewig and Kimberly Groff

Update on Old Colony Planning Council Water Study

Update and discussion on the timeline of hydro dredge

Other business not anticipated by Chair

Adjourn

Posted on Wednesday, March 22, 2023, at 1:00 pm at each of the eight Clerk's offices listed below and the County web site at www.plymouthcountyma.gov

Financial Activity for CPCWDC

2/28/2023	Interest for February	\$ 62.15	\$ 304,068.00	statement balance 2/28/23 \$304,068.00
2/22/2023	TRC	\$ (26,702.95)		
1/31/2023	Interest for January	\$ 71.05		
		\$ (15,457.97)		
12/31/2022	Interest for December	\$ 73.90	\$ 346,095.72	statement balance 12/31/22 \$346,095.72
12/28/2022	Invoice Kimberly Groff Assoc	\$ (2,362.50)		
11/30/2022	Interest for November	\$ 73.04	\$ 348,384.32	statement balance 11/30/22 \$348,384.32
11/8/2022	TRC Invoices	\$ (26,620.87)		chck #1026
11/7/2022	County invoicing for FY 22	\$ (4,581.25)		chck #1027
10/31/2022	Interest for October	\$ 80.56	\$ 379,513.40	statement balance 10/31/22 \$379,513.40
9/30/2022	Interest for September	\$ 77.95	\$ 379,432.84	statement balance 9/30/22 \$379,432.84
8/31/2022	Interest for August	\$ 17.38	\$ 379,354.89	statement balance 8/31/22 \$379,354.89
8/19/2022	deposit for Keene Engineering for dredge	\$ (35,000.00)		
8/15/2022	TRC Invoices for May, June, and July 2022	\$ (21,227.68)		
7/31/2022	Interest for July	\$ 18.50	\$ 435,565.19	statement balance 7/31/22 \$435,565.19
6/30/2022	Interest for June	\$ 17.90	\$ 435,546.69	statement balance 6/30/22 \$435,546.69
5/31/2022	Interest for May	\$ 18.93		
5/23/2022	Invoice for Kimberly Groff Assoc (April Inv)	\$ (3,300.00)	\$ 435,509.86	
5/23/2022	Invoice for TRC environmental (April Inv)	\$ (7,145.43)		
4/30/2022	Interest for April	\$ 18.53		statement balance 4/30/22 \$449,621.87
4/22/2022	Invoice for TRC environmental (March Inv)	\$ (3,666.58)		
4/12/2022	Invoice Kimberly Groff Assoc	\$ (3,975.00)		
3/31/2022	Interest for March	\$ 19.49	\$ 453,578.34	statement balance 3/31/22 \$453,578.34
3/11/2022	ESS Consulting invoice	\$ (16,563.64)		
2/28/2022	Interest for February	\$ 18.32	\$ 470,122.49	statement balance 2/28/22 \$470,122.49
2/22/2022	ESS Consulting invoice	\$ (9,851.40)		
1/31/2022	Interest for January	\$ 20.38	\$ 479,955.57	
1/3/2022	Peter Tuttle final payment #1016	\$ (1,038.00)		
12/31/2021	Interest for December	\$ 21.23	\$ 480,973.19	statement balance 12/31/21 \$480,973.19
12/29/2021	check 1015, EES Oct and Nov Invoices	\$ (20,857.18)		
12/20/2021	check 1017, reimb Basler for web expenses	\$ (283.40)		
11/30/2021	Interest for November	\$ 20.64	\$ 502,092.54	statement balance 11/30/21 \$502,092.54
10/31/2021	Interest for October	\$ 20.00	\$ 502,071.90	statement balance 10/31/21 \$502,071.90
10/22/2021	State Earmark	\$ 50,000.00	\$ 502,051.90	administrative set aside
10/12/2021	ESS Consulting	\$ (21,783.01)	\$ 452,051.90	chk# 1014
9/30/2021	Interest for September	\$ 19.48	\$ 473,834.91	
9/1/2021	Kimberly Groff Assoc	\$ (2,625.00)	\$ 473,815.43	chk # 1012
8/31/2021	Interest for August	\$ 20.39	\$ 476,440.43	statement balance 8/31/21 \$476,440.43
8/25/2021	Frank Basler	\$ (130.76)	\$ 476,420.04	
8/25/2021	Plymouth County	\$ (4,730.08)	\$ 476,550.80	chk \$1011 for services for FY 21
7/31/2021	Interest for July	\$ 20.44	\$ 481,280.88	statement balance 7/31/21 \$481,280.88
6/30/2021	Interest for June	\$ 19.78	\$ 481,260.44	statement balance 6/30/21 \$481,260.44
5/31/2021	Interest for May	\$ 20.51	\$ 481,240.66	
5/4/2021	Kimberly Groff Assoc	\$ (4,950.00)	\$ 481,220.15	
4/30/2021	Interest for April	\$ 19.98	\$ 486,170.15	
3/31/2021	Interest for March	\$ 20.64	\$ 486,150.17	statement balance 3/31/21 \$486,150.17
2/28/2021	Interest for February	\$ 18.65		
1/31/2021	Interest for January	\$ 20.64	\$ 486,110.88	statement balance 1/31/21 \$486,110.88
12/31/2020	Interest for December	\$ 20.60	\$ 486,090.24	statement balance 12/31/20 \$486,304.01
12/30/2020	brochure printing and acrylic holders	\$ (213.77)		reimb to Frank chk#
11/30/2020	Interest for November	\$ 19.93	\$ 486,283.41	statement balance 11/30/20 \$486,283.41
10/31/2020	Interest for October	\$ 20.59		
9/30/2020	Interest for September	\$ 20.02	\$ 486,242.89	statement bal 9/30/20 \$486,497.89 - diff Source4 chk
9/16/2020	invoice for Source4 for brochure final payment	\$ (255.00)		pd #1007 \$255.00
	transfer for County Expenses	\$ (2,805.94)		pd #1008 \$2,805.94
8/31/2020	Interest for August	\$ 22.06	\$ 489,283.81	statement balance 8/31/20 \$
7/31/2020	Interest for July	\$ 41.44	\$ 489,261.75	statement balance 7/31/20 \$489,220.31
6/30/2020	Interest for March, April, May, and June	\$ 260.56	\$ 489,220.31	statement balance 6/30/20 \$489,220.31
2/29/2020	Interest for January and February	\$ 240.84	\$ 488,959.75	statement balance 2/29/20 \$488,959.75
1/20/2020	reimb to Basler for Weebly invoices #1006	\$ (263.45)		pd #1006 \$263.45
1/20/2020	Madeline M. Smith invoice 11/30/19 #1005	\$ (1,025.00)		pd #1005 \$1,025.00
12/31/2019	Interest December	\$ 124.82	\$ 490,007.36	statement balance 12/31/2019 \$490,007.36
11/30/2020	Interest November	\$ 91.36	\$ 489,882.54	statement balance 11/30/2019 \$489,882.54
11/1/2019	Madeline M. Smith invoice 9/30/19 #1004	\$ (1,210.39)		
11/15/2019	DCR Transfer Admin Costs	\$ 50,000.00		
11/15/2019	DCR Transfer special earmark	\$ 155,000.00		
10/31/2019	Interest October	\$ 97.13	\$ 286,001.57	
9/30/2019	Interest September	\$ 94.13		
8/31/2019	Interest for August	\$ 97.66	\$ 285,810.31	statement balance 8/31/2019 \$287,565.31
8/27/2019	Madeline M. Smith invoice #1003	\$ (1,755.00)		
6/30/2019	Interest for July	\$ 97.63		
6/30/2019	Interest for June	\$ 95.57	\$ 287,370.02	statement balance 6/30/19 \$287,370.02
5/31/2019	Interest for March, April, and May	\$ 302.58		
5/29/2019	Peter Tuttle final payment #1002	\$ (10,860.00)		
4/30/2019	County of Plymouth - Admin FY 19 and Expenses (7/1 to 4/30)	\$ (2,186.33)		email, admin fee \$1,500 for FY 19, and misc services
3/31/2019	Interest through March 31, 2019	\$ 259.27		
1/22/2019	DCR for water plan	\$ 170,000.00		
1/22/2019	DCR for FY 19	\$ 50,000.00		
6/1/2018	DCR for FY 18	\$ 50,000.00		
5/30/2018	Interest through May 31, 2018	\$ 138.53		
4/19/2018	Peter Tuttle #1003	\$ (7,950.00)		
3/8/2018	County of Plymouth - FY 18 Admin and Expenses	\$ (1,227.40)		email, bussiness cards, admin fee \$1,000 FY '18
3/8/2018	Corona Environment	\$ (9,900.00)		
1/30/2017	County of Plymouth - FY 17 Admin and Expenses	\$ (1,302.20)		email, bussiness cards, envelopes, admin fee \$1,000 FY '17
5/15/2016	DCR for FY 16	\$ 50,000.00		

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DCR



INVOICE

PAYMENT INSTRUCTIONS: Please pay by ACH or WIRE. Provide Invoice Numbers/Amounts to
ARremitdetail@trccompanies.com

Electronic Funds Payment Details:

Bank Name: Citizens Bank:
US ACH: 211170114
US WIRE: 011500120

Swift Code: CTZIUS33
Account Name: TRC
Account Number: 2232037090

Check Payment Mailing Address: TRC LOCKBOX • P.O. BOX 536282 • PITTSBURGH, PA 15253-5904

Central Plymouth County Water District Commission
44 Obery Street
Plymouth, MA 02360

March 16, 2023
Project No: 016120.0000.0000
Invoice No: 580099
Project Manager: Matthew Ladewig

Project 016120.0000.0000 SILVER LAKE WATER QUALITY MONITORING PROGRAM

Professional Services through March 10, 2023

Phase 000007 GROUNDWATER ASSESSMENT

TRC Personnel

	Hours	Rate	Amount	
Ladewig, Matthew	1.00	95.00	95.00	
Communication Fee			3.80	
Total	1.00		98.80	98.80
Total this Phase				\$98.80

Phase 000008 TECHNICAL MEMORANDUM

TRC Personnel

	Hours	Rate	Amount	
Ladewig, Matthew	3.75	215.00	806.25	
Martin, Stephanie	5.00	140.00	700.00	
Communication Fee			60.25	
Total	8.75		1,566.50	1,566.50
Total this Phase				\$1,566.50
Total this Invoice				\$1,665.30



INVOICE

PAYMENT INSTRUCTIONS: Please pay by ACH or WIRE. Provide Invoice Numbers/Amounts to
ARremitdetail@trccompanies.com

Electronic Funds Payment Details:

Bank Name: Citizens Bank:
US ACH: 211170114
US WIRE: 011500120

Swift Code: CTZIUS33
Account Name: TRC
Account Number: 2232037090

Check Payment Mailing Address: TRC LOCKBOX • P.O. BOX 536282 • PITTSBURGH, PA 15253-5904

Central Plymouth County Water District Commission
44 Obery Street
Plymouth, MA 02360

February 20, 2023
Project No: 016120.0000.0000
Invoice No: 575987
Project Manager: Matthew Ladewig

Project 016120.0000.0000 SILVER LAKE WATER QUALITY MONITORING PROGRAM

Professional Services through February 10, 2023

Phase 000008 TECHNICAL MEMORANDUM

TRC Personnel

	Hours	Rate	Amount	
Bachand, Kristen	5.00	130.00	650.00	
Ladewig, Matthew	2.00	215.00	430.00	
Martin, Stephanie	18.00	140.00	2,520.00	
Treacy, James	.50	140.00	70.00	
Communication Fee			146.80	
Total	25.50		3,816.80	3,816.80
Total this Phase				\$3,816.80

Phase 000009 Internal Phosphorous Load Analysis and Water Quality Modeling

TRC Personnel

	Hours	Rate	Amount	
Ladewig, Matthew	3.75	215.00	806.25	
Communication Fee			32.25	
Total	3.75		838.50	838.50
Total this Phase				\$838.50
Total this Invoice				\$4,655.30

6

Silver Lake Water Quality Monitoring Program

Project Update

Central Plymouth County Water District Commission
March 28, 2023

SUPPORTING

[DOING]

LEADING

TRCcompanies.com

Project Background – Objectives/Goals

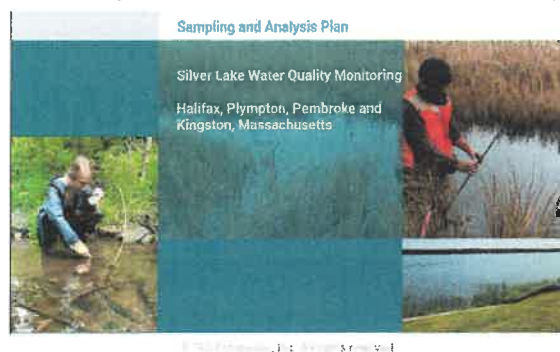
- Collect water quality data to help inform community management decisions to address water quality and quantity issues in Silver Lake and connected water bodies
- Develop a baseline understanding of current water quality and continue to develop solutions-oriented relationships with the City of Brockton's Water Division and the public



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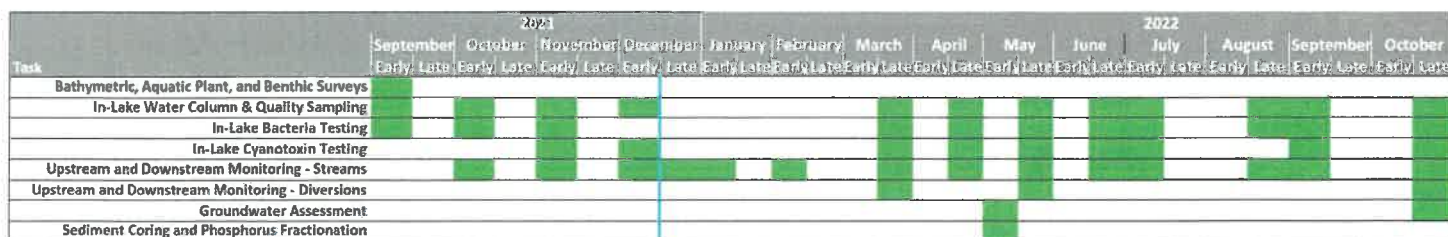
Project Background – Quality

- **Sampling and Analysis Plan (SAP)** - description of project domain, design, and schedule
 - Draft SAP presented to the public in August 2021
 - Public input received and incorporated into revised SAP – finalized January 2022
- **Quality Assurance Project Plan (QAPP)** – description of quality assurance/quality control
 - Draft QAPP submitted to US EPA Region 1 and MassDEP in January 2022
 - Agency comments received and incorporated into revised QAPP – finalized April 2022



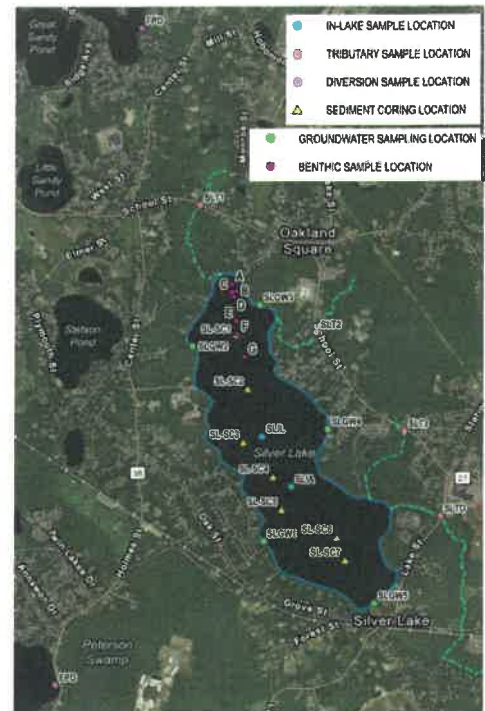
Monitoring Program - Timeline

- More than one year of monitoring data collected – September 2021 to October 2022
- Variety of physical, biological, and chemical data collected
- Field visits on an at least monthly basis
- Continuous data loggers in streams and deepest point in lake



Monitoring Program - Locations

- 29 total sampling locations
- 4 in-lake surface water locations
- 4 tributary and outlet surface water locations
- 2 diversion source surface water locations
- 7 sediment coring locations
- 5 shoreline groundwater locations
- 7 benthic macroinvertebrate locations
- Additional in-lake water depth and aquatic plant mapping locations



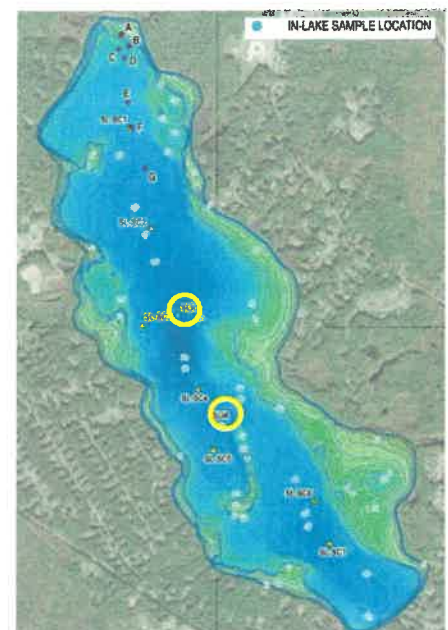
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Monitoring Program – In-Lake Water Quality Sampling

- In-lake sampling focused at SLIL (deep location)
 - Continuous loggers for temperature and water depth at surface and bottom
 - Continuous logger for chlorophyll a at surface
 - Monthly water quality samples at surface, mid-, and bottom depths
 - Monthly vertical profiles of temperature, dissolved oxygen, and specific conductance
- Additional vertical profiles at SLIA
 - Additional in-lake location with occasional measurements



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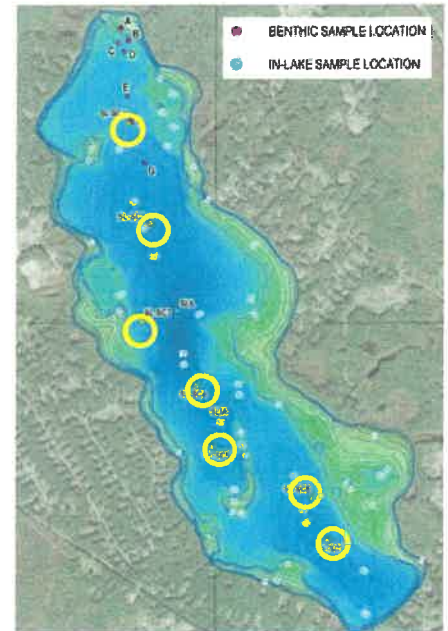


Monitoring Program – In-Lake Sediment Sampling

- Macroinvertebrate grab sampling at seven locations of varying depth
 - Conducted September 2021
- Sediment core sampling at seven locations
 - Conducted May 2022
 - Analyzed vertical profiles using a phosphorus fractionation approach



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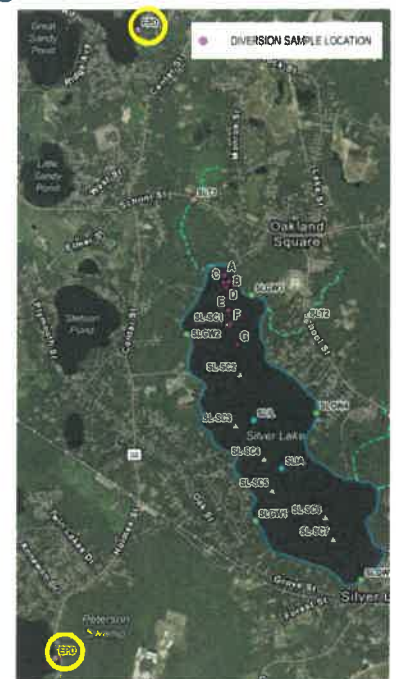


Monitoring Program – Diversion Water Quality Sampling

- Sampling in source ponds for two diversions to Silver Lake
 - Three visits to each source pond during active flow diversion in 2022 (East Monponsett was only diversion activated)
 - Collection of surface water quality samples
 - Vertical profiles of temperature, dissolved oxygen, and specific conductance



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Monitoring Program – Mapping

- More than 300 locations mapped in September 2022
- Lake was full at time of mapping
- Bathymetry (water depth)
- Aquatic plants

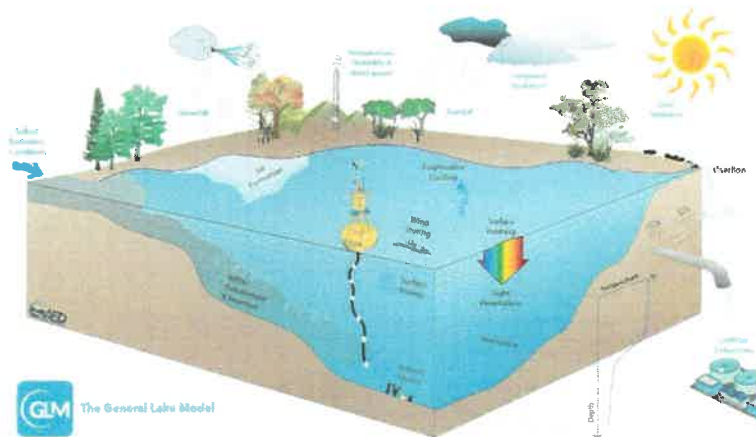


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Monitoring Program – Lake Modeling

- Developed lake model that included these components:
 - Water balance
 - External loads of N and P
 - Internal loads of N and P
 - Losses of N and P
 - N and P in-lake transformation
 - Lake temperature
- Model calibrated to observed conditions
- May be used to test management scenarios going forward



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Monitoring Program - Results

- Results of the monitoring program and modeling undergoing review
- Preliminary draft report complete
- More updates to come soon



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Thanks!

Questions?



Call Us:

Matt Ladewig
401.330.1204



Email Us:

mladewig@TRCcompanies.com



Visit Us:

TRCcompanies.com

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Financial Activity for CPCWDC

5/31/2023	Interest for May	\$	36.70	\$	172,841.07	statement balance 5/31/23 \$172,841.07
4/30/2023	Interest for April	\$	17.82	\$	172,804.37	
4/26/2023	DCR deposit of for FY 23 Earmarks	\$	100,000.00			
4/4/2023	TRC Invoice	\$	(6,330.60)			
3/31/2023	Interest for March	\$	49.15	\$	79,117.15	
3/22/2023	Old Colony Planning Group	\$	(225,000.00)			
2/28/2023	Interest for February	\$	62.15	\$	304,068.00	statement balance 2/28/23 \$304,068.00
2/22/2023	TRC	\$	(26,702.95)			
1/31/2023	Interest for January	\$	71.05			
		\$	(15,457.97)			
12/31/2022	Interest for December	\$	73.90	\$	346,095.72	statement balance 12/31/22 \$346,095.72
12/28/2022	Invoice Kimberly Groff Assoc	\$	(2,362.50)			
11/30/2022	Interest for November	\$	73.04	\$	348,384.32	statement balance 11/30/22 \$348,384.32
11/8/2022	TRC invoices	\$	(26,620.87)			chck #1026
11/7/2022	County invoicing for FY 22	\$	(4,581.25)			chck #1027
10/31/2022	Interest for October	\$	80.56	\$	379,513.40	statement balance 10/31/22 \$379,513.40
9/30/2022	Interest for September	\$	77.95	\$	379,432.84	statement balance 9/30/22 \$379,432.84
8/31/2022	Interest for August	\$	17.38	\$	379,354.89	statement balance 8/31/22 \$379,354.89
8/19/2022	deposit for Keene Engineering for dredge	\$	(35,000.00)			
8/15/2022	TRC invoices for May, June, and July 2022	\$	(21,227.68)			
7/31/2022	Interest for July	\$	18.50	\$	435,565.19	statement balance 7/31/22 \$435,565.19
6/30/2022	Interest for June	\$	17.90	\$	435,546.69	statement balance 6/30/22 \$435,546.69
5/31/2022	Interest for May	\$	18.93			
5/23/2022	Invoice for Kimberly Groff Assoc (April Inv)	\$	(3,300.00)	\$	435,509.86	
5/23/2022	Invoice for TRC environmental (April Inv)	\$	(7,145.43)			
4/30/2022	Interest for April	\$	18.53			statement balance 4/30/22 \$449,621.87
4/22/2022	Invoice for TRC environmental (March Inv)	\$	(3,666.58)			
4/12/2022	Invoice Kimberly Groff Assoc	\$	(3,975.00)			
3/31/2022	Interest for March	\$	19.49	\$	453,578.34	statement balance 3/31/22 \$453,578.34
3/11/2022	ESS Consulting invoice	\$	(16,563.64)			
2/28/2022	Interest for February	\$	18.32	\$	470,122.49	statement balance 2/28/22 \$470,122.49
2/22/2022	ESS Consulting invoice	\$	(9,851.40)			
1/31/2022	Interest for January	\$	20.38	\$	479,955.57	
1/3/2022	Peter Tuttle final payment #1016	\$	(1,038.00)			
12/31/2021	Interest for December	\$	21.23	\$	480,973.19	statement balance 12/31/21 \$480,973.19
12/29/2021	check 1015, EES Oct and Nov invoices	\$	(20,857.18)			
12/20/2021	check 1017, reimb Basler for web expenses	\$	(283.40)			
11/30/2021	Interest for November	\$	20.64	\$	502,092.54	statement balance 11/30/21 \$502,092.54
10/31/2021	Interest for October	\$	20.00	\$	502,071.90	statement balance 10/31/21 \$502,071.90
10/22/2021	State Earmark	\$	50,000.00	\$	502,051.90	administrative set aside
10/12/2021	ESS Consulting	\$	(21,783.01)	\$	452,051.90	chk# 1014
9/30/2021	Interest for September	\$	19.48	\$	473,834.91	
9/1/2021	Kimberly Groff Assoc	\$	(2,625.00)	\$	473,815.43	chk # 1012
8/31/2021	Interest for August	\$	20.39	\$	476,440.43	statement balance 8/31/21 \$476,440.43
8/25/2021	Frank Basler	\$	(130.76)	\$	476,420.04	
8/25/2021	Plymouth County	\$	(4,730.08)	\$	476,550.80	chk \$1011 for services for FY 21
7/31/2021	Interest for July	\$	20.44	\$	481,280.88	statement balance 7/31/21 \$481,280.88
6/30/2021	Interest for June	\$	19.78	\$	481,260.44	statement balance 6/30/21 \$481,260.44
5/31/2021	Interest for May	\$	20.51	\$	481,240.66	
5/4/2021	Kimberly Groff Assoc	\$	(4,950.00)	\$	481,220.15	
4/30/2021	interest for April	\$	19.98	\$	486,170.15	
3/31/2021	Interest for March	\$	20.64	\$	486,150.17	statement balance 3/31/21 \$486,150.17
2/28/2021	Interest for February	\$	18.65			
1/31/2021	Interest for January	\$	20.64	\$	486,110.88	statement balance 1/31/21 \$486,110.88
12/31/2020	Interest for December	\$	20.60	\$	486,090.24	statement balance 12/31/20 \$486,304.01
12/30/2020	brochure printing and acrylci holders	\$	(213.77)			reimb to Frank chk#
11/30/2020	Interest for November	\$	19.93	\$	486,283.41	statement balance 11/30/20 \$486,283.41
10/31/2020	Interest for October	\$	20.59			
9/30/2020	Interest for September	\$	20.02	\$	486,242.89	statement bal 9/30/20 \$486,497.89 - diff Source4 chk
9/16/2020	invoice for Source4 for brochure final payment	\$	(255.00)			pd #1007 \$255.00
	transfer for County Expenses	\$	(2,805.94)			pd #1008 \$2,805.94
8/31/2020	Interest for August	\$	22.06	\$	489,283.81	statement balance 8/31/20 \$
7/31/2020	Interest for July	\$	41.44	\$	489,261.75	statement balance 7/31/20 \$489,220.31
6/30/2020	Interest for March, April, May, and June	\$	260.56	\$	489,220.31	statement balance 6/30/20 \$489,220.31
2/29/2020	Interest for January and February	\$	240.84	\$	488,959.75	statement balance 2/29/20 \$488,959.75
1/20/2020	reimb to Basler for Weebly invoices #1006	\$	(263.45)			pd #1006 \$263.45
1/20/2020	Madeline M. Smith invoice 11/30/19 #1005	\$	(1,025.00)			pd #1005 \$1,025.00
12/31/2019	Interest December	\$	124.82	\$	490,007.36	statement balance 12/31/2019 \$490,007.36
11/30/2020	Interest November	\$	91.36	\$	489,882.54	statement balance 11/30/2019 \$489,882.54
11/1/2019	Madeline M. Smith invoice 9/30/19 #1004	\$	(1,210.39)			
11/15/2019	DCR Transfer Admin Costs	\$	50,000.00			
11/15/2019	DCR Transfer special earmark	\$	155,000.00			
10/31/2019	Interest October	\$	97.13	\$	286,001.57	
9/30/2019	Interest September	\$	94.13			
8/31/2019	Interest for August	\$	97.66	\$	285,810.31	statement balance 8/31/2019 \$287,565.31
8/27/2019	Madeline M. Smith invoice #1003	\$	(1,755.00)			
6/30/2019	Interest for July	\$	97.63			
6/30/2019	Interest for June	\$	95.57	\$	287,370.02	statement balance 6/30/19 \$287,370.02



INVOICE

PAYMENT INSTRUCTIONS: Please pay by ACH or WIRE. Provide Invoice Numbers/Amounts to
ARremitdetail@trccompanies.com

Electronic Funds Payment Details:

Bank Name: Citizens Bank:
US ACH: 211170114
US WIRE: 011500120

Swift Code: CTZIUS33
Account Name: TRC
Account Number: 2232037090

Check Payment Mailing Address: TRC LOCKBOX • P.O. BOX 536282 • PITTSBURGH, PA 15253-5904

Central Plymouth County Water District Commission
44 Obery Street
Plymouth, MA 02360

April 20, 2023
Project No: 016120.0000.0000
Invoice No: 585683
Project Manager: Matthew Ladewig

Project 016120.0000.0000 SILVER LAKE WATER QUALITY MONITORING PROGRAM

Professional Services through April 14, 2023

Phase 000001 ADMINISTRATION AND REPORTING

TRC Personnel

	Hours	Rate	Amount	
Ladewig, Matthew	1.00	215.00	215.00	
Communication Fee			8.60	
Total	1.00		223.60	223.60
Total this Phase				\$223.60

Phase 000008 TECHNICAL MEMORANDUM

TRC Personnel

	Hours	Rate	Amount	
Bachand, Kristen	.50	130.00	65.00	
Burns, Laurie	2.50	80.00	200.00	
Eiben, Haley	3.00	110.00	330.00	
Hershberger, Jeffrey	1.25	185.00	231.25	
Ladewig, Matthew	8.50	215.00	1,827.50	
Martin, Stephanie	79.00	140.00	11,060.00	
Treacy, James	2.00	140.00	280.00	
Communication Fee			559.75	
Total	96.75		14,553.50	14,553.50
Total this Phase				\$14,553.50

Phase 000009 Internal Phosphorous Load Analysis and Water Quality Modeling

Subcontractors

Reimb/Sub-Subcontractor Costs			
3/30/2023	BEC Engineering and Geology	Silver Lake Sediment Analysis and Lake Modeling	20,000.00
Total Subcontractors		1.1 times	20,000.00
Total this Phase			\$22,000.00
Total this Invoice			\$36,777.10



INVOICE

PAYMENT INSTRUCTIONS: Please pay by ACH or WIRE. Provide Invoice Numbers/Amounts to
ARremitdetail@trccompanies.com

Electronic Funds Payment Details:

Bank Name: Citizens Bank:
US ACH: 211170114
US WIRE: 011500120

Swift Code: CTZIUS33
Account Name: TRC
Account Number: 2232037090

Check Payment Mailing Address: TRC LOCKBOX • PO BOX 536282 • PITTSBURGH PA 15253-5904

Central Plymouth County Water District Commission
44 Obery Street
Plymouth, MA 02360

June 14, 2023
Project No: 016120.0000.0000
Invoice No: 595077
Project Manager: Matthew Ladewig

Project 016120.0000.0000 SILVER LAKE WATER QUALITY MONITORING PROGRAM

Professional Services through June 9, 2023

Phase 000009 Internal Phosphorous Load Analysis and Water Quality Modeling

Subcontractors

Reimb/Sub-Subcontractor Costs

6/2/2023	BEC Engineering and Geology	Silver Lake Sediment Analysis and Lake Modeling	1,700.00
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Total Subcontractors	1.1 times	1,700.00	1,870.00
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Total this Phase	\$1,870.00
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Total this Invoice	\$1,870.00
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INVOICE

Kimberly Groff Consulting

27 Pearl Street

Marblehead, MA 01945

Phone: 508-932-5528

Email: Kimberlygroffma@gmail.com

Date: April 30, 2023

Invoice No.: 006

Amount Due: \$5,400.00**Billing Address**

Frank Basler
Administrator, County of Plymouth
44 Obery Street
Plymouth, MA 02360

RE: Project Management and review services to oversee TRC (formerly ESS Group) on Silver Lake Monitoring Plan.

Silver Lake Monitoring

Date	Time	Description of Activity
11/17/22	2.0	Meeting with Joanne Z, Pat, Susan re Brockton PWS intake monitoring
11/18/22	1.5	Call with Laura Beachler, Prep Commission meeting
11/30/22	0.5	Meeting with TRC
12/2/22	0.5	Email Jack, Call TRC
12/7/22	1.0	Email Jack, Call TRC
1/19/23	1.0	Communications TRC, Commission
1/24/23	2.0	CPCWDC meeting
2/16/23	0.5	Communications TRC, Commission
3/24/23	1.0	Review CPCWDC Presentation
3/27/23	2.0	Calls and email, Jack O'Leary, Call B. Kolb
3/28/23	2.0	CPCWDC Commission meeting
3/29/23	0.5	Commission meeting follow-up
3/31/23	0.5	call TRC
4/10/23	5.5	Silver Lake Data Review, assess completeness of data set, feedback to TRC on Format, Call with Jack O.
4/11/23	1.0	call TRC
4/13/23	8.0	Review Silver Lake Monitoring report
4/14/23	3.5	Finalize Silver Lake Monitoring Report review, e-mail to Matt @ TRC with comments
4/28/23	3.0	Scoping Follow-on support services, Call Joanne Z. Re Coordination Regional Planning grant, billing
Total Hrs.	36	
Total Billing	\$ 5,400.00	

Silver Lake Water Quality Monitoring Program

Project Update

Central Plymouth County Water District Commission
June 27, 2023

SUPPORTING

[DOING]

LEADING

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Summary of Technical Findings - Data

Silver Lake Water Quality

Technical Findings – Overview

- Today's presentation to focus on results of key parameters

Temperature	DO	Oil Cont.	pH
Turbidity	Secchi	Alkalinity	Phosphorus
Nitrogen	Chlorophyll a	E. coli	Microcystins
Phytoplankton	Macrophytes	Macroinvertebrates	Water level
Sediment Moisture	Sediment Density	Long term station	Discharge

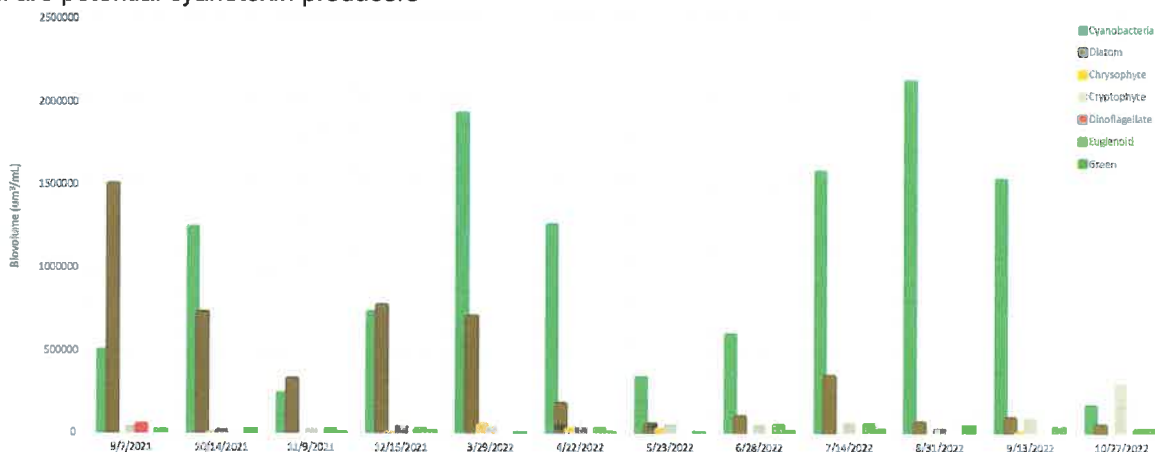
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Technical Findings – Overview

Key findings from the 2021-2022 study period:

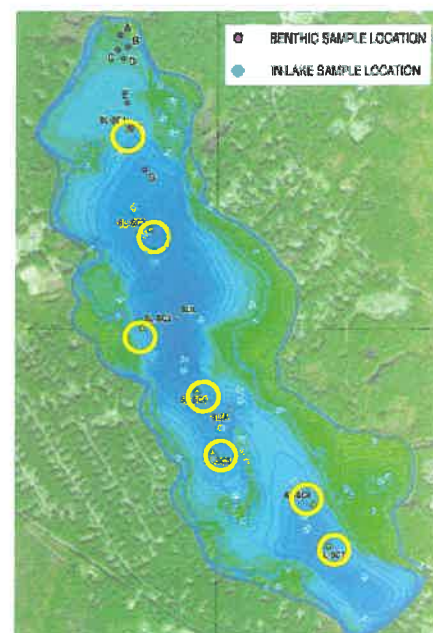
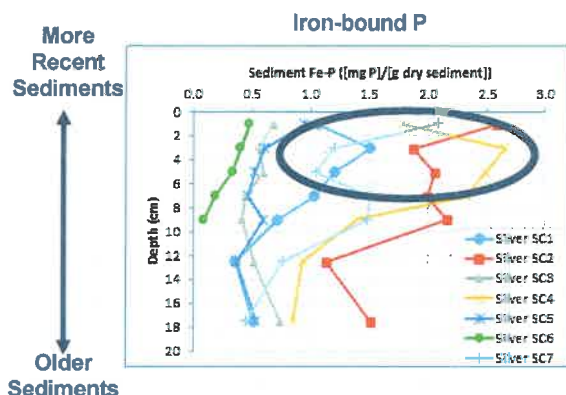
- Aquatic invasive plants present and widely distributed in Silver Lake
- Cyanobacteria common to dominant much of the year
- Cyanotoxins present at detectable concentrations each visit from November 2021 to June 2022
- Sediments rich in phosphorus, including forms that readily release into the water column
- Dissolved oxygen low or absent from bottom waters for several months of the year
- Nutrient levels elevated in water column
- Outlet ceases to flow at times

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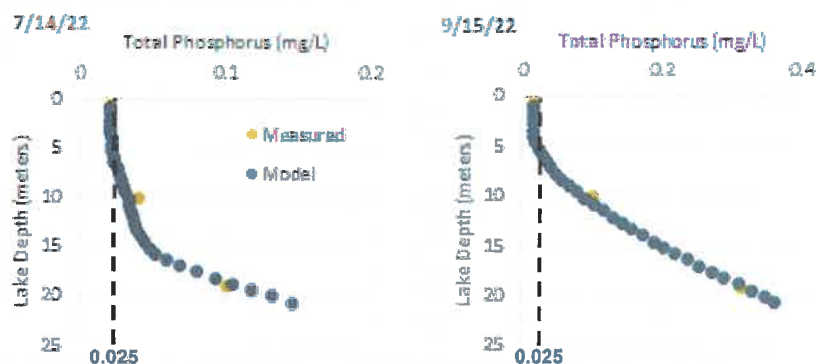
Technical Findings – Key Results: Sediment Phosphorus

- Primary phosphorus fraction was iron-bound (releases under low DO)
- No noticeable gradient north to south
- Highest concentrations in surface sediments of deepest waters

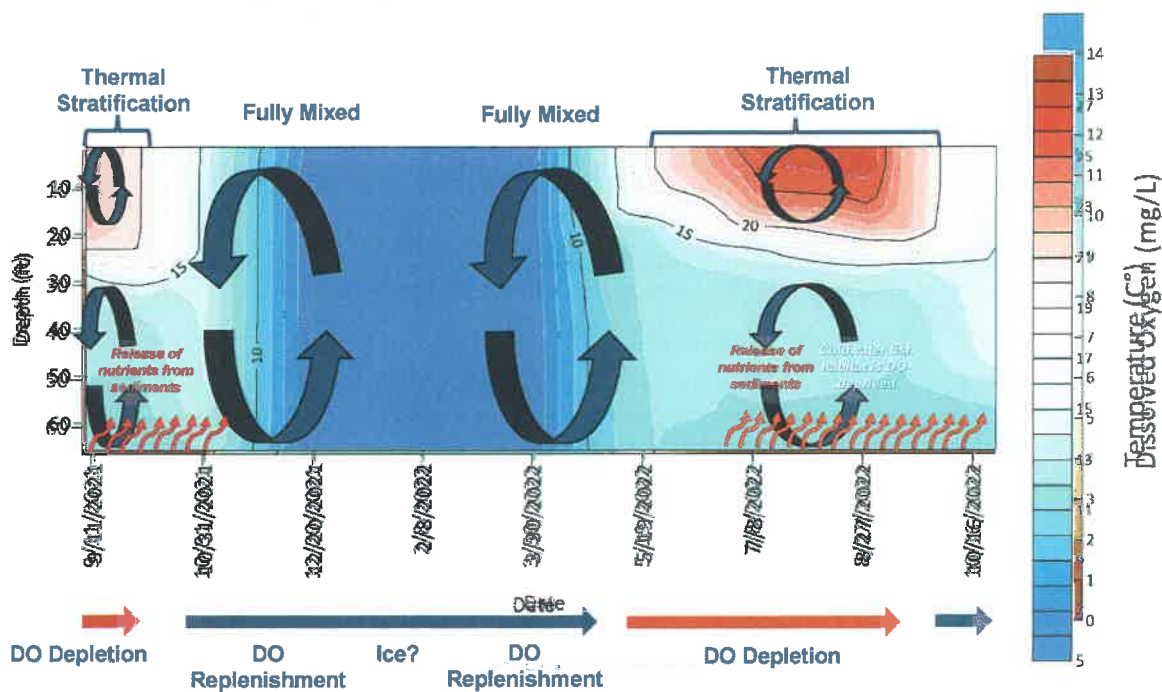


Technical Findings – Key Results: Nutrients and DO

- Total phosphorus exceeds EPA's "Gold Book" standard of 0.025 mg/L (25 ppb), most frequently in mid- and deep waters
- Bloom risk characterized as high at these levels (MassDEP 2021 Guidance on Cyanobacteria and Public Water Systems)
- Characteristic of a mesotrophic lake – more subject to recurring algae blooms, depletion of DO from deep waters, taste & odor issues, and undesirable levels of metals (e.g., iron & manganese)

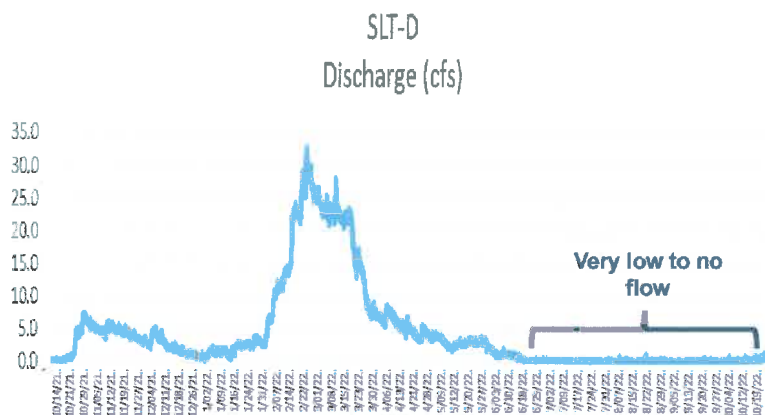


Technical Findings – Key Results: Nutrients and DO



Technical Findings – Key Results: Discharge

- Jones River flow record shows periods of low to no flow from outlet of Silver Lake (Forge Pond)
- In 2022 this period lasted more than three months (end of June to late October)
- Aquatic life impacts



Summary of Technical Findings - Modeling

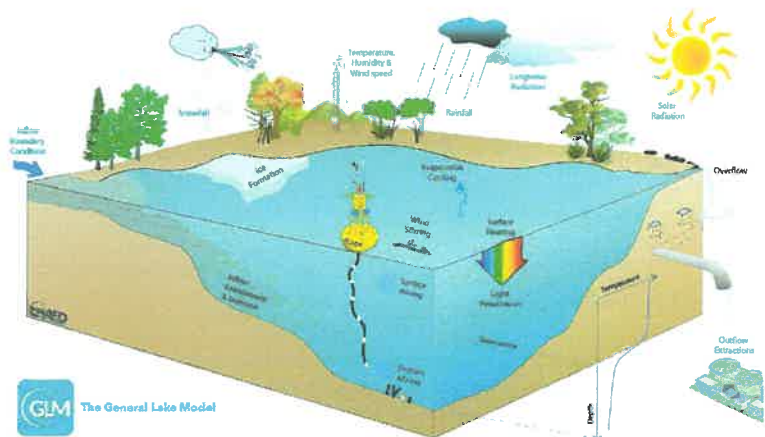
Silver Lake Water Quality

TRC completed and submitted report

23

Technical Findings – Model Components

- Developed lake model that included these components:
 - Water balance
 - Lake temperature
 - External loads of N and P
 - Internal loads of N and P
 - Losses of N and P
 - N and P in-lake transformation
- Model calibrated to observed conditions
- May be used to test management scenarios going forward



Technical Findings – Selecting the Dataset for Modeling

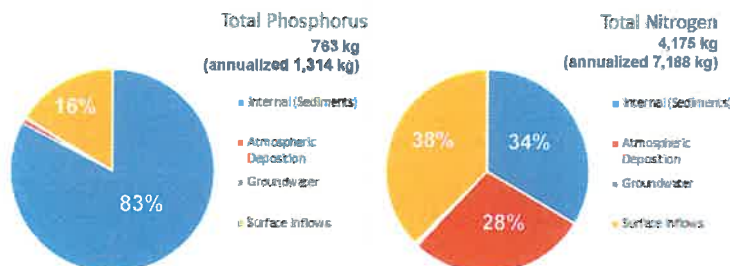
- Used 2022 data from March-October period - best suited
 - 2021 an atypically wet year – water levels in Silver Lake high
 - 2022 a near normal precipitation year overall but very dry spring and summer - short-term drought
 - More comprehensive dataset available for 2022 and better capture of thermal stratification in summer
 - Diversions from East Monponsett sampled multiple times (March, May, and October) in 2022
 - In-lake sampling data available from March-October 2022

		Drought Level by Region						
Month	Year	Western	CT River Valley	Central	Northeast	Southwest	Cape Cod	Islands
2/1/2021 through 8/31/2022								
February	2021	Mild Drought	Normal	Significant	Normal	Normal	Normal	Normal
March	2021	Mild Drought	Mild Drought	Mild Drought	Mild Drought	Significant Drought	Mild Drought	Normal
April	2021	Mild Drought	Mild Drought	Mild Drought	Normal	Normal	Mild Drought	Normal
May	2021	Mild Drought	Normal	Normal	Normal	Mild Drought	Mild Drought	Normal
June	2021	Normal	Normal	Normal	Normal	Normal	Mild Drought	Normal
July	2021	Normal	Normal	Normal	Normal	Normal	Mild Drought	Normal
August	2021	Normal	Normal	Normal	Normal	Normal	Mild Drought	Normal
September	2021	Normal	Normal	Normal	Normal	Normal	Normal	Normal
9/1/2022 - 1/31/2023								
April	2022	Normal	Normal	Normal	Normal	Mild Drought	Normal	Mild Drought
May	2022	Normal	Mild Drought	Mild Drought	Significant Drought	Significant Drought	Normal	Mild Drought
June	2022	Mild Drought	Significant Drought	Significant Drought	Significant Drought	Significant Drought	Normal	Mild Drought
July	2022	Mild Drought	Significant Drought	Critical Drought	Critical Drought	Significant Drought	Mild Drought	Mild Drought
July (through mid-month)	2022	Mild Drought	Critical Drought	Critical Drought	Critical Drought	Critical Drought	Significant Drought	Mild Drought
August	2022	Significant Drought	Critical Drought	Critical Drought	Critical Drought	Critical Drought	Critical Drought	Significant Drought
August (through mid-month)	2022	Significant Drought	Critical Drought	Critical Drought	Critical Drought	Significant Drought	Critical Drought	Significant Drought
September	2022	Normal	Mild Drought	Mild Drought	Significant Drought	Mild Drought	Significant Drought	Significant Drought
October	2022	Normal	Mild Drought	Normal	Mild Drought	Normal	Mild Drought	Significant Drought

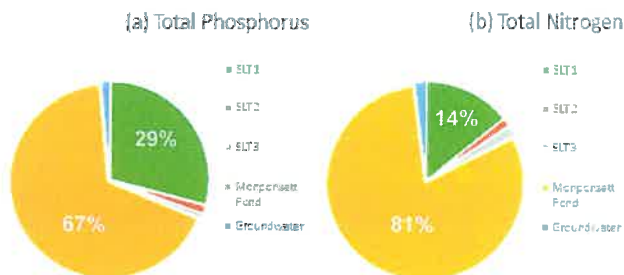
Technical Findings – Model Outputs: Nutrient Loading

- Internal loading from sediments was largest source of phosphorus to Silver Lake (>80%)
- External loading accounted for a larger share of nitrogen loading, mostly through surface inflows and atmospheric deposition
- Diversions from E Monponsett Pond was the largest source of external phosphorus and nitrogen loading

All Loading

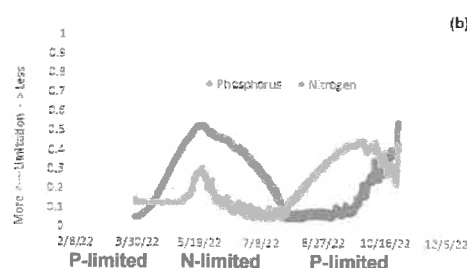
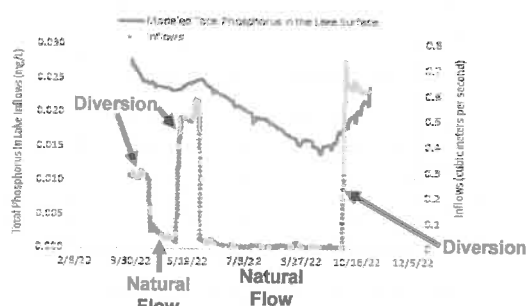


Surface and Groundwater Loading Only



Technical Findings – Model Outputs: Selected Insights

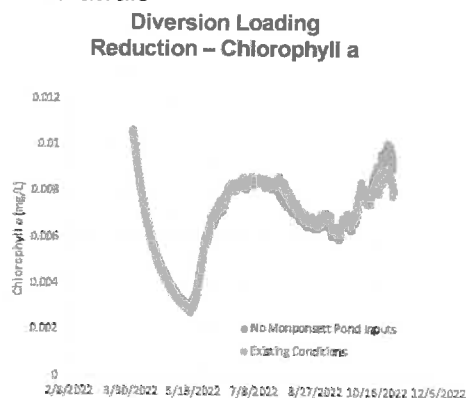
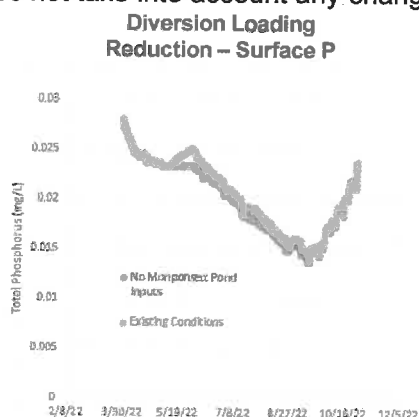
- Outputs include generation of continuous phosphorus, nitrogen, and chlorophyll a in Silver Lake
- Allows comparison of model outputs to various inputs
 - Inflows plotted against phosphorus concentration in Silver Lake
- Provides insights into nutrient limitation
 - Silver Lake appears to experience both phosphorus and nitrogen limitation
 - Certain cyanobacteria may be favored by nitrogen limitation because they can fix their own
- Can also use to test different “what if?” scenarios...



(b)

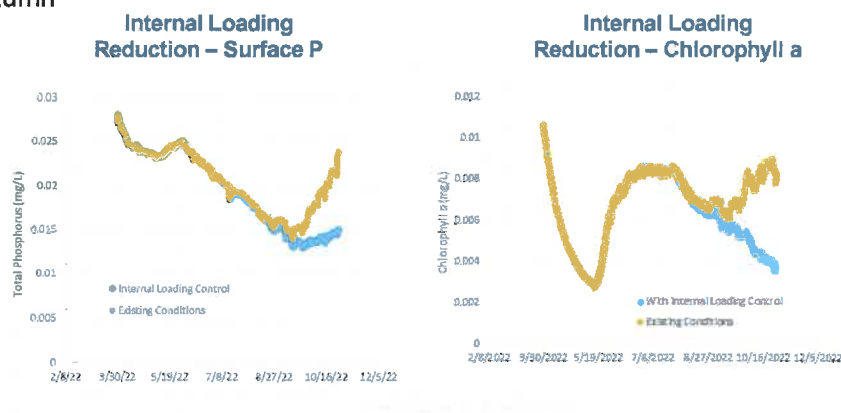
Technical Findings – Model Load Reduction Scenarios

- For instance, what would have happened if E. Monponsett diversions had been eliminated in 2022?
- On its own, elimination of diversions in 2022 (blue lines below) would have had minimal impact on nutrient levels or chlorophyll a in Silver Lake
- But this does not take into account any change in withdrawals



Technical Findings – Model Load Reduction Scenarios

- Alternatively, what if internal loading had been eliminated?
- Internal loading controls would decrease total phosphorus contributions during late summer/autumn
- This also results in a decrease in chlorophyll a over the same period
- Cumulative improvements may be realized the following year



In Conclusion

Silver Lake Water Quality

In Conclusion – Overall Assessment of Silver Lake

Applying MassDEP CALM approach, results of 2021-2022 monitoring program indicate Silver Lake is:

- Not supportive of Aquatic Life
 - Non-native plants
 - Dissolved oxygen
 - Total phosphorus
 - Other impairments also possible (e.g., nutrients)
- Supportive of Aesthetics
- Not supportive of Primary Contact Recreation (although swimming is prohibited)
 - Harmful algal blooms
- Supportive of Secondary Contact Recreation (also prohibited)



Source: MassDEP, 2021-2022 Monitoring Program

In Conclusion – Effects of Water Diversions

How have water diversions likely impacted the following?

- Aquatic plants
 - Species now in Silver Lake are also found in Furnace Pond and Tubbs Meadow Brook
 - Prior Furnace Pond diversions (pre-2020) could have been a source
- Cyanobacteria
 - None detected in either of the diversion sources
 - Unlikely to have been direct contributor of substantial cyanobacteria during the study period
- Cyanotoxins (Microcystins)
 - None detected in either of the diversion sources
 - Unlikely to have been direct contributor of cyanotoxins during the study period
- Dissolved oxygen
 - Levels mostly adequate in diversion sources under the observed conditions
 - DO levels likely to change in transit from diversions sources to Silver Lake

Source: MassDEP, 2021-2022 Monitoring Program

In Conclusion – Effects of Water Diversions

How have water diversions likely impacted the following?

- **Nutrients**
 - Phosphorus and nitrogen external loading to Silver Lake is much higher due to water diversions (67% and 81% of external loading, respectively)
 - Likely to have long-term effect, although diversions did not appear to have a major impact during the study period
- **Outlet flow issues**
 - If diversions were not used but water withdrawals and outlet configuration remained the same, outlet flow issues could worsen due to lower lake levels



In Conclusion – Key Takeaways

- Silver Lake appears to be facing multiple management issues, several of which rise to the level of water quality impairments.
- These impairments impact aquatic life and present a challenge to future use of Silver Lake as a public water supply.
- Excessive nutrients are associated with many of these impairments, particularly phosphorus.
- Modeling suggests that internal loading from the sediments is now the primary source of phosphorus to Silver Lake.
- Diversions were the primary external source of nutrients but the relationship with in-lake water quality may be complex.

In Conclusion – What to Do

- An appropriate management response needs to be developed and implemented to address current impairments and future risks.
- Localized actions may help to ensure the quality of raw and finished water from the point of the potable water intake to the distribution system but a large-scale approach will be needed to fully address the observed issues on a broader basis.
- Ongoing monitoring is recommended to track water quality, water quantity, and ecological trends.
- Additional modeling could be used to evaluate the effectiveness of alternative management scenarios.
- Ultimately, need to develop a comprehensive management plan for Silver Lake that:
 - Identifies a target condition
 - Assesses feasibility of management options for achieving that condition
 - Selects and prioritizes the preferred management options
 - Identifies funding needs and sources
 - Lays out a schedule for implementation
 - Provides a mechanism for evaluating success

Thanks!

Questions?



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June 15, 2023

c/o Jack O'Leary (via e-mail)
Chair
Central Plymouth County Water District Commission (CPCWDC)
44 Obery Street
Plymouth, MA 02360

RE: CPCWDC Technical Assistance: Project Management Oversight TRC Companies (formerly ESS Group) Silver Lake Water Quality Monitoring Project Halifax, Plympton, Pembroke and Kingston, Massachusetts

Dear Jack:

This letter is being submitted in response to the Central Plymouth County Water District Commission (CPCWDC or Commission) request for technical assistance in managing and overseeing Silver Lake monitoring and associated tasks performed by TRC Companies as described in ESS proposal 17835. This letter serves as a new scope of work and budget to proposal.

At this juncture the water quality monitoring has been completed by TRC Companies. A draft *Silver Lake Water Quality Monitoring Program Technical Memorandum for the towns of Halifax, Plympton, Pembroke, and Kingston, Massachusetts, (April 2023)* has been completed and is under review by CPCWDC. Once the report is approved by the Commission it will be finalized and made publicly available.

The preliminary report findings suggest that Silver Lake is not currently supportive of aquatic life and primary contact recreation and is likely impaired by excessive nutrients. The City of Brockton maintains that the public water supply finished water meets all regulatory standards. Of most concern was the detection of cyanobacteria in the surface water of Silver Lake. This condition will be in need of ongoing management by both the Commission and City of Brockton.

The draft memorandum recommends that an appropriate management response to address these observed issues and improve water quality in Silver Lake is needed. Although localized approaches may be useful for ensuring the quality of raw or finished water from the point of the potable water intake to the distribution system, a large-scale and comprehensive approach will be needed to achieve lake wide improvements. Key recommendations from the TRC companies draft report include the:

1. Continued monitoring of Silver Lake Water and associated waterbodies
2. Modeling of alternative management scenarios
3. Development of a lake management plan
4. Watershed Scale planning in the areas contributing runoff to Silver Lake

If the Commission chooses to support these recommendations as part of a Phase II effort, there will be a need to coordinate efforts between the Commission and other projects

Recommended technical support tasks to be performed by Kimberly Groff are outlined below:

Task 1: Final Silver Lake Water Quality Monitoring Program Technical Memorandum – Work with the Commission and TRC to finalize the draft Silver Lake Water Quality Monitoring Program Technical Memorandum. Work with TRC to develop a lay-friendly information leaflet, a public presentation. Work with the Commission to set up a public listening session. Assist CPCWDC in gathering and distilling public and stakeholder feedback. Report to the Commission as appropriate.

Task 2: Public Outreach related to Silver Lake Monitoring Report Findings

This task will involve targeted outreach to key community stakeholders, regulators regional planners and NGOs to convey report findings, and engage communities and stakeholders in solutions focused dialog. Key Contacts will include MassDEP, MassDPH, OCPC, City of Brockton, Towns of Project Halifax, Plympton, Pembroke and Kingston, Jones River, USEPA. This will also involve working with TRC to prepare a Silver Lake Water Quality Data Submission to MassDEP and to facilitate the transfer of Silver Lake Monitoring data to MassDEP for review and assessment. Ideally MassDEP will utilize data to update the listing during the next integrated (303(d), 305(b)) reporting cycle. Once Silver Lake is listed as impaired for nutrients it will trigger the need for a Total Maximum Daily Load Study. Report to the Commission as appropriate.

Task 3: Silver Lake Commission Liaison – In the short term the draft water quality memorandum recommends that an appropriate management response to improve water quality in Silver Lake be developed. A number of follow-on activities are in the process of being evaluated and discussed by the Commission. Under the direction of the Commission, Kimberly Groff will serve as the point of contact for the Commission and ensure appropriate scopes of work and budgets are developed for any follow-on activities the Commission wishes to pursue. Once approved Kimberly Groff will serve as a liaison between the Commission, its Consultants and partners.

- CPCWDC - Phase II Silver Lake Monitoring and Associated Tasks– Kimberly Groff will serve as the day-to-day point of contact on behalf of CPCWDC. Anticipated activity includes updating Phase II monitoring plans (scope and budget), oversight of QAPP and SAP updates (if needed) and communication with TRC Companies to address emerging issues. Assist in review of data and dissemination of results to collaborators.
- City of Brockton Silver Lake Monitoring – In a telephone conversation, Bernadette Bernadette Kolb; CDM Smith, City of Brockton PWS consultant has indicated that Brockton is in the process of developing a monitoring plan for Silver Lake. Ideally this effort should be coordinated with sampling carried out by CPCWDC and other entities. Kimberly Groff can serve as the point of contact for CPCWDC. Data collection by other entities including local Boards of Health, State agencies, watershed groups, NGO's etc should be identified and looped in to the data collection activities described above.
- Economic Resilience and Sustainable Water Supply in the Old Colony Economic Development District – OCPC was recently awarded a grant to assess Public Water Supply needs and identify options to address gaps and/or vulnerabilities in water supply for the 17 communities in the OCPC footprint, including all eight communities of the CPCWDC. CPCWDC is a partner on the project and will likely be invited to be part of the Steering Committee. If directed by the Commission Kimberly Groff will serve as a liaison on the committee on behalf of the CPCWDC.

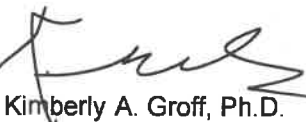
Task 4: Coordination with the Brockton Water System (BWS)- The coordination would consist of requesting and reviewing the basic water reports that are issued daily (at least they used to be), contacts with BWS to address routine items such as adjusting water levels when they affect property owners and structures (fish ladder), contacting the appropriate BWS staff about matters relevant to the Commission, such as major new water users, water use commitments outside of BWS and/or the District, and updating the Commission on these items weekly via email.

Report all related activities to the Commission as appropriate .

The budget cost for technical service will be completed on a time and materials basis billed at a rate of \$150/hr (project not to exceed \$10,000). The estimated cost for technical services are predicated on the assumptions and information described in this letter and may be subject to change.

Thank you for the opportunity to work with the Commission on this complex and interesting project. In the meantime don't hesitate to reach out (cell: 508-932-5528, kimberlygroffma@gmail.com) if you have questions or comments.

Sincerely,



Kimberly A. Groff, Ph.D.
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CC: Frank Basler