MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

**Meeting:** Board of Managers
**Meeting date:** 12/15/2022
**Agenda Item #: 7.2**
**Request for Board Action**

| | |
|---|---|
| **Title:** | Authorization to Purchase Water-level Sensors for Groundwater Wells |
| **Resolution number:** | 22-080 |
| **Prepared by:** | Name: Kailey Cermak<br>Phone: 952-641-4501<br>kcermak@minnehahacreek.org |
| **Reviewed by:** | Name/Title: Brian Beck/Research and Monitoring Program Manager |
| **Recommended action:** | Authorize the purchase of water-level sensors for groundwater wells |
| **Schedule:** | January-March: Install groundwater wells and order monitoring equipment<br>March-April: Start data collection |
| **Budget considerations:** | Fund name and code: Research and Monitoring-Equipment/supplies 5-5001-4570<br>Fund budget: $30,000<br>Expenditures to date: $14,031<br>Requested amount of funding: NTE: $15,969 |

**Past Board action:**

| | |
|---|---|
| Res # 22-038 | Title: Authorization to Submit Proposal to LCCMR for Development of 2D Watershed Model |
| Res # 21-091 | Title: Authorization to Execute Contract for 2D Pilot Model |
| Res # 21-051 | Title: Authorization to Execute Memorandum of Understanding (MOU) with the City of Edina |
| Res # 21-024 | Title: Authorization to Submit Proposal to LCCMR for Development of a 2D Watershed Model |

**Climate Context:**
Climate change is measurably changing the distribution, frequency and intensity of rainfall in Minnesota. The Minnehaha Creek Watershed has experienced the wettest seven years ever recorded. Over the past 10 years, Minnesota has experienced both record flood conditions and statewide drought that has negatively impacted aquatic ecology, stressed stormwater infrastructure, and created billions in property damage. To successfully adapt to the increasingly volatile extremes in weather, Minnehaha Creek Watershed District (MCWD or District) and communities must be able to identify what landscape interventions are needed, where they are needed, and how much investment is needed.

The first stage of the MCWD's Climate Action Framework is to "Understand and Predict" the impacts of climate change using new data sets and modeling to forecast scenarios, evaluate vulnerabilities, and make decisions about adaptation options. These data will create a foundation for MCWD to engage with partner agencies in climate conversations and develop actionable plans for resilience at a system and community scale.

**2D Watershed-wide model:**

To evolve and meet the growing demands of climate change, the District must develop new tools to collect and analyze data. Among the tools that need to be developed is a higher resolution watershed model that enables the District and its partners to predict future flooding in surface waters, in grid systems, and with groundwater.

To pursue this work, on June, 9 2022 the Minnehaha Creek Watershed District Board of Managers authorized staff to submit a proposal for $738,000 to the LCCMR to develop a watershed wide 2D model. The application was accompanied by numerous letters of support from District communities as well as written support from regional, state, and federal agencies such as the Minnesota Department of Natural Resources (MnDNR) and the United States Geological Survey (USGS). The LCCMR has placed MCWD's proposal in a category to be recommended for funding, with funds being made available in July 2023.

The model build will draw from (1) numerous existing high-resolution spatial datasets to develop a granular representation of the watershed system within the model and (2) water level data from stream, lakes and groundwater to calibrate and validate the model results to measured conditions. Collection of these data falls into three categories including:

- **Spatial Landscape or Infrastructure Data**: These data include the physical representation of the watershed, such as, landuse, LiDAR, soils, and stormwater infrastructure. These datasets, and the ability to incorporate them into the upcoming watershed-wide model build has been an area of focus within the District's 2D modeling projects to date. MCWD's Pilot 2D Watershed Model (2022) and Geospatial Data Standardization Project (2023) focuses on developing automated processes to convert spatial data from municipal and regional partners into a model ready format.
- **Surface Water Levels:** Measured streamflow and lake levels are critically important to building any watershed model because they provide a means of adjusting the model parameters to ensure the model can accurately predict water levels. In 2019, MCWD began implementing the Real Time Sensor Level Network (RESNET) to collect stream and lake levels throughout the District, in part, to ensure enough data was available for model calibration.
- **Groundwater Data:** In recent years it has become readily apparent that the interaction between surface water and groundwater is critical to understanding how water moves through the watershed. However, MCWD's ability to incorporate groundwater data into the model is hampered by the sparse availability of surficial groundwater data. Therefore, MCWD staff have incorporated groundwater data collection into the Watershed Wide 2D model project, which requires the installation of groundwater wells and purchase of water level sensors. These data will be used to calibrate the groundwater aspect of the watershed model to ensure that it can accurately predict surface water flow in the face of climate driven extreme weather events.

The collection of surface water data and spatial data processing is well underway, which leaves the groundwater data as the final aspect to drive forward for the 2D model.

**Groundwater Well Network Status:**

Record precipitation between 2014 and 2019 highlighted the need for the District to better understand the importance of groundwater, which was memorialized in the Lake Nokomis Area Groundwater and Surface Water Evaluation Study. In 2020, MCWD staff initiated a process to identify watershed models that incorporate a groundwater component.

MCWD staff first met with external modeling experts to understand the range of complexity in which groundwater is incorporated or factored into 2D hydrologic and hydraulic models. This was followed by a scope of work to evaluate the full suite of initial modeling options and narrow in on which models best suited the District's needs. That work, along with follow-up vendor discussions, led to the District's decision to test two modeling platforms (ICM and ICPR) through its 2D Pilot Model Project.

In 2021 and 2022, staff identified the need to develop a groundwater monitoring strategy since surficial groundwater data within the watershed is sparse and MCWD has not historically focused on groundwater monitoring. Staff first reached out to technical groundwater experts at the USGS and MnDNR to form an advisory team to help drive the

design and implementation of a groundwater well network that would support the District's future modeling efforts. A summary of the insights and recommendations from this group included:

1. Recommendations to install wells in surficial sand and gravel soils, which are located throughout the lower watershed and in select locations of the upper watershed
2. Consensus that the original target of 5-10 surficial groundwater wells would provide enough information to characterize groundwater conditions in the Minnehaha Creek Watershed District
3. Locating wells on publicly owned land would provide the greatest likelihood for well installation

In November 2022, MCWD staff used this information to identify a subset of locations that would meet the criteria developed with the USGS and MnDNR expert panel to validate the locations as a group and coordinate logistics with the MnDNR groundwater well drilling team. The panel supported the approach and locations selected by MCWD staff.

**Next Steps**

The next step in the process is to refine the exact locations and acquire the equipment to monitor groundwater levels at each site. The exact equipment to be used will need to be tailored to each well and will also be influenced by the monitoring partnerships that are determined through the planning process. To account for these variabilities, staff have acquired quotes from the two vendors that equipment would be sourced from (In-situ, Inc and Ott-Hydromet). Pricing indicates a range of $1,100 to $1,800 per well. Staff are requesting an amount not to exceed $15,969 for the purchase of water level sensors to cover the possible 10 groundwater wells. The Research and Monitoring Department budgeted funds for 2022 in anticipation of this purchase and budget is available to cover the requested amount.

**Supporting materials:**

Example sensor product pricing from OTT-Hydromet and In-situ, Inc.

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# RESOLUTION

**Resolution number:** 22-080

**Title:** Authorization to Purchase Water Level Sensors for Groundwater Wells

WHEREAS climate change is measurably changing the distribution, frequency and intensity of rainfall in Minnesota;

WHEREAS watershed managers, in partnership with local communities, must accelerate efforts to monitor, evaluate and adapt to these changes in order to fulfill shared goals of managing flood risk and improving water quality;

WHEREAS a key pillar in Minnehaha Creek Watershed District's (MCWD) climate action strategy is to understand. and predict the impacts of climate change using new data analytical and planning tools;

WHEREAS to support this strategy, the District has identified the need to develop a watershed-wide two dimensional (2D) model that incorporates high resolution stormwater infrastructure and land surface data to improve our ability to inform current and future water resource management decisions in the face of changing climate;

WHEREAS in June 2022, the Board of Managers authorized staff to submit a proposal for $738,000 to the Legislative-Citizen Commission on Minnesota Resources (LCCMR) to develop a watershed-wide model;

WHEREAS record breaking precipitation patters from 2014 through 2019 have highlighted the importance of groundwater and stressed the need for it to be represented within the upcoming watershed-wide 2D model;

WHEREAS future model calibration efforts will require both groundwater and surface water data;

WHEREAS existing surficial groundwater data within the watershed are sparse and the District has not historically monitored groundwater, requiring staff to develop a groundwater monitoring strategy and well network from the ground up;

WHEREAS staff have convened an advisory team with groundwater experts from the Minnesota Department of Natural Resources and United States Geological Survey to guide the design and support the implementation of the well network;

WHEREAS insights from this group included (1) recommendations to install wells within surficial sand and gravel soils, (2) consensus that the original target of 5-10 wells would provide enough information to characterize groundwater conditions and (3) placing wells on publicly owned land would provide the greatest likelihood for successful well installation;

WHERAS the next step in the process is to refine the exact well locations and acquire the groundwater level monitoring equipment;

WHEREAS the equipment will be determined and purchased on a site-by-site basis and influenced by monitoring partnerships that will be determined as exact well locations are identified;

WHEREAS to account for these current unknowns, quotes have been obtained to determine the range in costs per well;

WHEREAS staff is recommending the purchase of water level sensor equipment for groundwater well monitoring from OTT Hydromet and/or In-situ, Inc., to cover the possible ten wells;

NOW, THEREFORE, BE IT RESOLVED that the Minnehaha Creek Watershed District Board of Managers authorizes the District Administrator to purchase groundwater monitoring equipment from In-situ Inc. and/or OTT Hydromet in a total not to exceed $15,969.

Resolution Number 22-080 was moved by Manager _____, seconded by Manager _____. Motion to adopt the resolution ___ ayes, ___ nays, ___abstentions. Date: 12/15/2021

_____ Date: _____

Secretary

# QUOTATION

**Date** 29 Nov 2022
**Quotation Number** 22-028365
**Valid For**

**Bill To:**
Minnehaha Creek Watershed District
15320 Minnetonka Blvd
Minnetonka, Minnesota 55345
kcermak@minnehahacreek.org

**Ship To:**
Minnehaha Creek Watershed District
15320 Minnetonka Blvd
Minnetonka, Minnesota 55345

Terms and conditions are specified in MN Contract #194145. Shipping and surcharges waived per contract terms. All OTT Hydromet brand items sold in the USA and not specified in the contract price list are discounted 5%.

PLS500

| No | Part # | Product Description | Qty | Unit Price (USD) | Ext. Price (USD) |
|---|---|---|---|---|---|
| 1 | 6303900190-S-I-1 | PLS500, PRESSURE LEVEL, SDI-12, Imperial, 0-10M<br><br>**Notes:** Contract Pricing: $981.70 | 1.0 | 981.70 | 981.70 |
| 2 | 970003396-M | PLS500 Probe Cable (per Meter)<br><br>**Notes:** Contract Pricing: $4.70 per meter | 30.0 | 4.70 | 141.00 |
| 3 | 6302502142 | FAD 4PF<br><br>**Notes:** Contract Pricing: $71.42 | 1.0 | 71.42 | 71.42 |
| | | | **Group Subtotal Price** | | 1,194.12 |

Orpheus Mini

| No | Part # | Product Description | Qty | Unit Price (USD) | Ext. Price (USD) |
|---|---|---|---|---|---|
| 4 | ORM010MAL | OTT Orpheus Mini level logger with 10 meter range and alkaline batteries<br><br>**Notes:** Contract Pricing: $1,139 | 1.0 | 1,139.00 | 1,139.00 |
| 5 | SYSLENGTH | Integrated vented cable for use with OTT Orpheus Mini/CTD/ecoLog 500/800 devices - per meter<br><br>**Notes:** 30m total length. Contract Pricing: $5.50/m | 30.0 | 5.50 | 165.00 |
| | | | **Group Subtotal Price** | | 1,304.00 |

# QUOTATION

ecoLog1000

| No | Part # | Product Description | Qty | Unit Price (USD) | Ext. Price (USD) |
|---|---|---|---|---|---|
| 6 | 5545000190-4D | EL1K 0-4M/0-13Ft BATT VZN<br>ecoLog 1000 Measuring Range 0-4m/0-13ft with 26Ah Battery/Verizon modem<br>**Notes:** Contract Pricing: $1,726.34 | 1.0 | 1,726.34 | 1,726.34 |
| 7 | CABLESENSOR-FT | EL1K length in feet<br>Total system length of ecoLog1000, in feet. System length includes 2.5ft for probe and logger. Sold per foot.<br>**Notes:** 30m total length. Contract Pricing: $1.11 Per FT | 98.0 | 1.11 | 108.78 |
| | | | **Group Subtotal Price** | | 1,835.12 |

## Notes:

| | |
|---|---|
| **Payment Terms** | |
| **Freight Terms** | |
| **Expected Delivery Time** | |
| **Sales Tax** | Tax not included in Grand Total Price<br><br>Proof of tax exempt status or payment of sales tax is the responsibility of the buyer |

If you have any questions or need further information, please don't hesitate to contact me. I look forward to hearing from you soon.

Sincerely,
Miles Corcoran
Email: miles.corcoran@otthydromet.com, Phone: (970) 397-1094
Prepared by:Miles Corcoran

## Terms and Conditions

Remit orders to sales@otthydromet.com

**Advantages of Simplified Shipping and Handling**

**Safe & Fast Delivery**
- Receive tracking numbers an your order acknowledgement
- Hach will assist with claims if an order is lost or damaged in shipment

**Save Time - Less Hassle**
- No need to set up deliveries for orders or to schedule pickup
- Hach ships order as product is available, at no additional charge, when simplified shipping and handling is used

**Save Money**
- No additional invoice to process – save on time and administrative costs
- Only pay shipping once, even if multiple shipments are required

NEW RATES EFFECTIVE 5/18/2022 - Standard Simplified Shipping and Handling Charges*

| Order Value | Standard Surface (Mainland USA) | Second Day Delivery (Mainland USA) | Next Day Delivery (Mainland USA) | Second Day Delivery (Alaska & Hawaii) | Next Day Delivery (Alaska & Hawaii) | Collect Handling Fee** |
|---|---|---|---|---|---|---|
| $ 0 - $49.99 | $17 | $42 | $79 | $68 | $129 | $12 |
| $50 - $149.99 | $27 | $79 | $149 | $113 | $215 | $14 |
| $150 - $349.99 | $47 | $123 | $255 | $158 | $308 | $15 |
| $350 - $649.99 | $66 | $171 | $340 | $214 | $414 | $16 |
| $650 - $949.99 | $83 | $179 | $374 | $221 | $417 | $17 |
| $950 - $1999.99 | $104 | $221 | $466 | $262 | $507 | $18 |
| $2000 - $3999.99 | $120 | $234 | $480 | $273 | $518 | $20 |
| $4000 - $5999.99 | $139 | $243 | $503 | $274 | $533 | $25 |
| $6000 - $7999.99 | $164 | $277 | $572 | $302 | $582 | $30 |
| $8000 - $9999.99 | $187 | $315 | $615 | $337 | $638 | $35 |
| >$10000 | 2.5% of Net | 4.5% of Net | 7% of Net | 4.5% of Net | 7% of Net | $50 |

*Shipping and handling charges shown are only applicable to orders billing and shipping to U.S. destinations
**OTT HydroMet will assess a collect handling charge on orders where customers use their accounts to schedule shipments. This handling fee covers the additional costs that OTT HydroMet incurs from processing and managing collect shipments.
https://www.otthydromet.com/en/policies/terms-and-conditions-of-sale?origin=footer&c1=policies&c2=terms-and-conditions-of-sale&cli

# Quote – Q-99299

In-Situ, Inc.
221 E. Lincoln Avenue
Fort Collins, CO 80524
U.S.A.

Tel: (800) 446-7488
Fax: (970) 498-1598
Email: sales@in-situ.com
Web: www.in-situ.com

**Issued By: Andrew Luessenhop**
**Date: December 9, 2022**
**Quote Valid for 30 days**

| Sales Manager | Customer ID | Payment Terms | Shipping Method | INCO Terms | Final Destination |
|---|---|---|---|---|---|
| Andrew Luessenhop | 004017 | NET 30 DAYS | FedEx Ground | | United States<br>Minnesota |

| Quote To: | Ship To: |
|---|---|
| Minnehaha Creek Watershed Dist<br>15320 MINNETONKA BLVD<br>MINNETONKA, Minnesota 55345<br>United States | Minnehaha Creek Watershed Dist<br>15320 Minnetonka Blvd<br>Minnetonka, Minnesota 55345<br>United States |
| **Attn:** | **Comments:** |
| Kailey Cermak<br>kcermak@minnehahacreek.org<br>(952) 471-0590 | |

## Equipment

| Line | Product Description | Part Number | Unit of Sale | Qty. | Unit Price | Total Price |
|---|---|---|---|---|---|---|
| 1. | Level TROLL 500, Level Sensor Range - 11m, 35 ft (15 Psig) | 0089010 | Each | 1 | $1,295.00 | $1,295.00 |
| 2. | Rugged Twist-Lock Cable, Vented, TPU, No Reel, Twist-Lock,None | 0052000-01-01-07-00 | 30 ft | 1 | $262.50 | $262.50 |
| | | | | | **Subtotal:** | **$1,557.50** |

## Optional

| Line | Product Description | Part Number | Unit of Sale | Qty. | Unit Price | Total Price |
|---|---|---|---|---|---|---|
| 3. | 2-Year Extended Warranty | 0063030 | Each | 1 | $155.00 | $155.00 |
| | | | | | **Subtotal:** | **$155.00** |

## Quote Total

*Tax is not normally quoted due to State & local variability. If you need to have Tax included in this quotation, please contact us.*
*If your organization is a tax-exempt entity, please email or fax a copy of your tax-exempt certificate to taxcerts@in-situ.com or fax to (970) 498-1598.*
*Tax rates will be based on delivery address of the order.*

**Sales Tax:** **$0.00**

*For further information regarding the Warranty or Terms and Conditions, please refer to our website at http://in-situ.com/terms-conditions/*

*All quoted product & service prices are in U.S. Dollars unless specifically noted otherwise.*

**Shipping:** **$91.00**

**Total Amount (Excludes Optional Items):** **USD** **$1,648.50**

In-Situ, Inc.
221 E. Lincoln Avenue
Fort Collins, CO 80524
U.S.A.

Tel: (800) 446-7488
Fax: (970) 498-1598
Email: sales@in-situ.com
Web: www.in-situ.com

# Quote – Q-99299

**Issued By: Andrew Luessenhop**
**Date: December 9, 2022**
**Quote Valid for 30 days**

**Managing your data has never been this easy!**
Our intuitive VuSitu Mobile App allows you to view data from the field on your smartphone or tablet. For long-term or remote sites, integrate In-Situ instruments with our wireless telemetry systems and cloud-based HydroVu Data Services for real-time, decision-quality data. Ask your sales rep for more information.