

SWIMS
11/26/24

Wisconsin DNR – Lake Level Monitoring Staff Gauge Survey Data Sheet

6/20/2024 8:02

Lake Information

Lake Name Bone Lake

County Polk

Data Collectors

Primary Data Collector _____

Email _____

Phone No. _____

Additional Data Collector(s) _____

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1)

Latitude: 45-31-19.63 Longitude: 92-22-42.567

Reference Mark Type: Concrete corner SW

Location Description: SW corner of concrete stoop

Mean Sea Level Yes ☐ No ☐ Elevation: 1155.22 Photograph ☐

Reference Mark #2 (RM2)

Latitude: 45-31-19.86 Longitude: 92-22-43.011

Reference Mark Type: Concrete corner SW

Location Description: SW corner of concrete patio @ joint of curve begins

Mean Sea Level Yes ☐ No ☐ Elevation: 1155.01 Photograph ☐

Reference Mark #3 (RM3)

Latitude: 45-31-20.05 Longitude: 92-22-43.011

Reference Mark Type: Concrete corner NW

Location Description: NW corner of concrete patio @ joint of curve ends

Mean Sea Level Yes ☐ No ☐ Elevation: 1155.02 Photograph ☐

Staff Gauge

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1154.05 Photograph ☐

Location Description: _____

Date: _____ Time: _____ AM/PM

Check one: Install ☐ Midseason ☐ Removal ☐

Survey Stage 1 - Instrument at first height*

	Reference Mark 1	Fore sight (FS1)	Calculated Elevation (CE1)	Water FS1 5.84 Elev. = 1152.63 - 2.32 SWIMS ☺ 1150.31
Given Elevation (GE _{RM1})	<u>1155.22</u>			
Back sight 1 (BS1)	+ <u>3.25</u>			
Height of Instrument (HI1)	<u>1158.47</u>			
	- Staff Gauge	<u>4.42</u>	= <u>1154.05</u>	
	HI1 - Ref Mark 2	<u>3.46</u>	= <u>1155.01</u>	
	HI1 - Ref Mark 3	<u>3.45</u>	= <u>1155.02</u>	

Survey Stage 2 – Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation1	<u>1154.05</u> ←			
Back sight 2 (BS2)	+ <u>4.34</u>			
Height of Instrument (HI2)	<u>1158.39</u>			
	- Ref Mark 1	<u>3.17</u>	= <u>1155.22</u>	
	HI2 - Ref Mark 2	<u>3.39</u>	= <u>1155.00</u>	
	HI2 - Ref Mark 3	<u>3.38</u>	= <u>1155.01</u>	

Quality Assurance Checks:

Reference Mark 1: BS1 3.25 FS1 4.42
GE = CE2 BS2 + 4.34 FS2 + 3.17
7.59 = 7.59

QA Equations:

BS1 + BS2 = FS1_{SG} + FS2_{RM1}

GE_{RM1} = CE2_{RM1}

*Accept Survey Stage 1 if QA checks within 0.01 ft. Use calculated elevations 1 for the rest of the season unless the gauge moves.

EGAD # 3200-2018-45



Wisconsin DNR – Lake Level Monitoring Staff Gauge Survey Data Sheet

Lake Level Reading: 2.32 ft

Revised 2016

Site Diagram (including Staff Gauge and Reference Marks)



Notes

[illegible]

Data Management

Survey Data uploaded to SWIMS? Yes ☐ No ☐ Date: _____ Name: _____

Data Sheet scan uploaded to SWIMS? Yes ☐ No ☐ **Date:** _____ **Name:** _____

Equipment Maintenance

Replace bolts/screws on staff gauge? Yes ☐ No ☐ Date: _____ Name: _____

Replace gauge plate on staff gauge? Yes ☐ No ☐ Date: _____ Name: _____

Replace post or wooden board? Yes ☐ No ☐ Date: _____ Name: _____

EGAD # 3200-2018-45



SWIMS
11/26/24

Wisconsin DNR – Lake Level Monitoring
Staff Gauge Survey Data Sheet

9/26/2024

8:02-8:03

Lake Information

Lake Name Bone Lake

County Polk

Data Collectors

Primary Data Collector

Email

Phone No.

Additional Data Collector(s)

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1)

Reference Mark Type: Concrete corner SW

Latitude: 45-31-19.63 Longitude: 92-22-42.567

Mean Sea Level Yes ☐ No ☐ Elevation: 1155.22 Photograph ☐

Location Description: SW corner of concrete stoop

Reference Mark #2 (RM2)

Reference Mark Type: Concrete corner SW

Latitude: 45-31-19.86 Longitude: 92-22-43.011

Mean Sea Level Yes ☐ No ☐ Elevation: 1155.01 Photograph ☐

Location Description: SW corner of concrete patio @ joint of curve begins

Reference Mark #3 (RM3)

Reference Mark Type: Concrete corner NW

Latitude: 45-31-20.05 Longitude: 92-22-43.011

Mean Sea Level Yes ☐ No ☐ Elevation: 1155.02 Photograph ☐

Location Description: NW corner of concrete patio @ joint of curve ends

Staff Gauge

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1154.05 Photograph ☐

Location Description: _____

Date: _____ Time: _____ AM/PM

Check one: Install ☐ Midseason ☐ Removal ☐

Survey Stage 1 - Instrument at first height*

	Reference Mark 1		Fore sight (FS1)	Calculated Elevation (CE1)	Water FS1 6.50 Elev. = 1151.81 - 1.5 = <u>SWIMS 1150.31</u> Survey Equations: HI1 = GE _{RM1} + BS1 CE1 = HI1 - FS1
Given Elevation (GE _{RM1})	<u>1155.22</u>				
Back sight 1 (BS1)	+ <u>3.09</u>				
Height of Instrument (HI1)	<u>1158.31</u>	- Staff Gauge	<u>4.26</u>	= <u>1154.05</u>	
	HI1	- Ref Mark 2	<u>3.30</u>	= <u>1155.01</u>	
	HI1	- Ref Mark 3	<u>3.29</u>	= <u>1155.02</u>	

Survey Stage 2 – Reset instrument at different height

	Staff Gauge		Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation1	<u>1154.05</u>				
Back sight 2 (BS2)	+ <u>4.20</u>				
Height of Instrument (HI2)	<u>1158.25</u>	- Ref Mark 1	<u>3.03</u>	= <u>1155.22</u>	Survey Equations: HI2 = CE _{SG1} + BS2 CE2 = HI2 - FS2
	HI2	- Ref Mark 2	<u>3.24</u>	= <u>1155.01</u>	
	HI2	- Ref Mark 3	<u>3.23</u>	= <u>1155.02</u>	

Quality Assurance Checks:

Reference Mark 1: BS1 3.09 FS1 4.26
GE = CE2 BS2 + 4.20 FS2 + 3.03
7.29 = 7.29

QA Equations:
BS1 + BS2 = FS1_{SG} + FS2_{RM1}
GE_{RM1} = CE2_{RM1}

*Accept Survey Stage 1 if QA checks within 0.01 ft. Use calculated elevations 1 for the rest of the season unless the gauge moves.



Lake Level Reading: 1.50 ft

Site Diagram (including Staff Gauge and Reference Marks)



Data Management

Data Sheet scan uploaded to SWIMS? Yes ☐ No ☐ Date: _____ Name: _____

Replace post or wooden board? Yes ☐ No ☐ Date: _____ Name: _____