

gauge moved
6/20/24
3.3
2.10

swims
11/20/24

8:04-8:05

Wisconsin DNR – Lake Level Monitoring
Staff Gauge Survey Data Sheet

6/20/2024

3.3 original
2.1 new per
me

Lake Information

Lake Name Horseshoe 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: NE Cor. concrete step

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1215.79 Photograph ☐

Location Description: _____

Reference Mark #2 (RM2)

Reference Mark Type: Gin Spike east side of Maple

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1218.29 Photograph ☐

Location Description: _____

Reference Mark #3 (RM3)

Reference Mark Type: PK Nail west side of Oak

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1217.29 Photograph ☐

Location Description: _____

Staff Gauge

Original Gauge Elev.

Latitude: _____ Longitude: _____ Mean Sea Level Yes ☐ No ☐ Elevation: 1214.67 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 5.71 Elev. = 1214.26 - 3.30 = 1210.96 - 2.10 = 1212.96
Given Elevation (GE _{RM1})	<u>1215.79</u>	Moved Gauge		<u>1210.96</u>	
Back sight 1 (BS1)	+ <u>4.18</u>	Due to High Water		<u>1212.16</u>	
Height of Instrument (HI1)	<u>1219.97</u>	- Staff Gauge	<u>5.30</u>	= <u>1214.67</u>	Survey Equations: HI1 = GE _{RM1} + BS1 CE1 = HI1 - FS1
	HI1	- Ref Mark 2	<u>1.69</u>	= <u>1218.28</u>	
	HI1	- Ref Mark 3	<u>2.69</u>	= <u>1217.28</u>	

Survey Stage 2 – Reset instrument at different height

	Staff Gauge		Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation1	<u>1214.67</u>	←			
Back sight 2 (BS2)	+ <u>5.20</u>				Survey Equations: HI2 = CE _{SG1} + BS2 CE2 = HI2 - FS2
Height of Instrument (HI2)	<u>1219.87</u>	- Ref Mark 1	<u>4.08</u>	= <u>1215.79</u>	
	HI2	- Ref Mark 2	<u>1.58</u>	= <u>1218.29</u>	
	HI2	- Ref Mark 3	<u>2.59</u>	= <u>1217.28</u>	

Quality Assurance Checks:

Reference Mark 1:	BS1 <u>4.18</u>	FS1 <u>5.30</u>		QA Equations: BS1 + BS2 = FS1 _{SG} + FS2 _{RM1} GE _{RM1} = CE2 _{RM1}
GE = CE2	BS2 + <u>5.20</u>	FS2 + <u>4.08</u>	New Board FS2 4.02 Elev. = 1215.85	
	<u>9.38</u>	= <u>9.38</u>		

*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.



Staff Gauge Survey Data Sheet

Revised 2016

Lake Level Reading: 3.30 ft Original Board

Site Diagram (including Staff Gauge and Reference Marks)



Notes

Blank lined paper for writing.

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: _____



Wisconsin DNR – Lake Level Monitoring Staff Gauge Survey Data Sheet

Revised 2016

Lake Level Reading: _____ ft

Site Diagram (including Staff Gauge and Reference Marks)



Notes

[illegible]

Data Management

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

