

Appendix B. Staff Gauge Calibration Data Sheet

Wisconsin DNR – Lake Level Monitoring  
Staff Gauge Survey Data Sheet

**Lake Information**  
Lake Name: MANNA THIN RTE SEC 30 County: WILAS

**Data Collectors**  
Primary Data Collector: EMILY HEALD Email: WATER@DISCOVERYCENTER.WI.GOV Phone No.: (715) 543-2085  
Additional Data Collector(s): R. JENKS Email: RJENKS.JENKS@GMAIL.COM Phone No.: 262-853-6220

**Reference Mark and Staff Gauge Information**  
Reference Mark #1 (RM1) Reference Mark Type: \_\_\_\_\_  
Latitude: 45 59 31.92 Longitude: -89 39 33.84 Mean Sea Level Yes  No  Elevation: \_\_\_\_\_ Photograph   
Location Description: BENCH MARK 1089-D A SQUARE CHISEL MARK IN CONCRETE ON LEFT WING WALL OF DAM  
Reference Mark #2 (RM2) Reference Mark Type: \_\_\_\_\_  
Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_ Mean Sea Level Yes  No  Elevation: \_\_\_\_\_ Photograph   
Location Description: TOP OF GREEN FENCE POST LOCATED APPROX. 57" NE OF RM1 ON NORTH SIDE OF PATH TO DAM  
Reference Mark #3 (RM3) Reference Mark Type: \_\_\_\_\_  
Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_ Mean Sea Level Yes  No  Elevation: \_\_\_\_\_ Photograph   
Location Description: SCREW LOCATED IN LOWER N SIDE OF A ~~WHITE~~ TREE, APPROX. 50' SE OF RM2  
Staff Gauge Reference Mark Type: \_\_\_\_\_  
Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_ Mean Sea Level Yes  No  Elevation: \_\_\_\_\_ Photograph   
Location Description: PERMANENTLY MOUNTED TO A SOLID IRON PIPE IN THE WATER APPROX. 15' SE OF THE DAM

Date: 5/6/2019 Time: \_\_\_\_\_ AM/PM  Check one: Install  Midseason  Removal

Survey Stage 1 - Instrument at first height\*

	Reference Mark 1	Fore sight (FS1)	Calculated Elevation (CE1)	
Given Elevation (GE <sub>RM1</sub> )	<u>100 = 304.8 cm</u>			Survey Equations: HI1 = GE <sub>RM1</sub> + BS1 CE1 = HI1 - FS1
Back sight 1 (BS1)	<u>+ 161.4 cm = 5.30 ft</u>	<u>7.71 ft</u>	<u>97.59 ft</u>	
Height of Instrument (HI1) <sup>105.3 ft</sup>	<u>3209.4 cm</u> - Staff Gauge	<u>235 cm</u>	<u>= 2974.4</u>	
	HI1 - Ref Mark 2	<u>0.7 cm</u>	<u>= 3208.7 = 105.17</u>	
	HI1 - Ref Mark 3	<u>103.8 cm</u>	<u>= 3105.6 = 101.89</u>	

Survey Stage 2 - Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation 1	<u>304.8</u>			Survey Equations: HI2 = CE <sub>SG1</sub> + BS2 CE2 = HI2 - FS2
Back sight 2 (BS2)	<u>+ 162.8</u>			
Height of Instrument (HI2)	<u>3210.8</u> - Ref Mark 1	<u>236.2</u> <sup>gauge</sup>	<u>= 2974.6</u>	
	HI2 - Ref Mark 2	<u>0.6</u>	<u>= 3210.2</u>	
	HI2 - Ref Mark 3	<u>105.0</u>	<u>= 3105.8</u>	

**Quality Assurance Checks:**  
Reference Mark 1: BS1 105.17 FS1 7.71  
GE = CE2 BS2 + \_\_\_\_\_ FS2 + 4.54  
= \_\_\_\_\_ = \_\_\_\_\_  
QA Equations:  
BS1 + BS2 = FS1<sub>SG</sub> + FS2<sub>RM1</sub>  
GE<sub>RM1</sub> = CE2<sub>RM1</sub>

\*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: 1.4 ft