

1060 E. Bone LK CT.

Wisconsin DNR - Lake Level Monitoring

7/7/2020 8:30 AM Staff Gauge Survey Data Sheet

BOTTOM BOAT
BACK OF GAGE

Lake Information

Lake Name

Bone LAKE

County

Polk

Data Collectors

Primary Data Collector

Email

Phone No.

Additional Data Collector(s)

SWIMS 1/22/2021

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1)

Reference Mark Type:

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 South Side of HOUSE

Reference Mark #2 (RM2)

Reference Mark Type:

Latitude: 45-31-19.86 Longitude: 92-22-42.961 Mean Sea Level Yes No Elevation: 1155.02 Photograph

Location Description: SW Corner of Concrete PATIO @ JOINT where PATIO concrete STARTS TO CURVE

Reference Mark #3 (RM3)

Reference Mark Type:

Latitude: 45-31-20.05 Longitude: 92-22-43.011 Mean Sea Level Yes No Elevation: 1155.04 Photograph

Location Description: NW Corner of Concrete PATIO @ JOINT @ End of Curve of concrete

Staff Gauge

Latitude: 45-31-18.994 Longitude: 92-22-45.042 Mean Sea Level Yes No Elevation: Photograph

Location Description:

Date: 7/7/2020 Time: 8:30 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 _{RM1})	1155.22			
Back sight 1 (BS1)	+ 3.27			
Height of Instrument (HI1)	1158.49	8.41	= 1150.08	Survey Equations: HI1 = GE _{RM1} + BS1 CE1 = HI1 - FS1
	HI1 - Ref Mark 2	3.48	= 1155.01	
	HI1 - Ref Mark 3	3.46	= 1155.03	

Survey Stage 2 - Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation 1	1150.08			
Back sight 2 (BS2)	+ 7.87			
Height of Instrument (HI2)	1157.95	2.72	= 1155.23	Survey Equations: HI2 = CE _{SG1} + BS2 CE2 = HI2 - FS2
	HI2 - Ref Mark 2	2.93	= 1155.02	
	HI2 - Ref Mark 3	2.92	= 1155.03	

Quality Assurance Checks

Reference Mark 1:	BS1 3.27	FS1 8.41	
GE = CE2	BS2 + 7.87	FS2 + 2.72	
	1154	= 1153	

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: 1.81 ft

WATER ELEV 1151.94

Calculated Elevation 1150.13

ELEV 1151.94

WATER 1st 6.55 2ND 6.01

1060 E. Bone LK CT.

Wisconsin DNR - Lake Level Monitoring Staff Gauge Survey Data Sheet

10/20/2020 8:30 Am

Lake Information

Lake Name

Bone LAKE

County

Polk

Data Collectors

Primary Data Collector

Email

Phone No.

Additional Data Collector(s)

45.52212

92.37849

SWIMS 1/22/2021

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1)

Reference Mark Type:

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 South Side of House

Reference Mark #2 (RM2)

Reference Mark Type:

Latitude: 45-31-19.86 Longitude: 92-22-42.961 Mean Sea Level Yes No Elevation: 1155.02 Photograph

Location Description: SW Corner of Concrete Patio @ Joint where patio concrete starts to curve

Reference Mark #3 (RM3)

Reference Mark Type:

Latitude: 45-31-20.05 Longitude: 92-22-43.011 Mean Sea Level Yes No Elevation: 1155.01 Photograph

Location Description: NW Corner of Concrete patio @ joint @ end of curve of concrete

Staff Gauge

Latitude: 45-31-18.994 Longitude: 92-22-45.047 Mean Sea Level Yes No Elevation: _____ Photograph

Location Description: _____

45.52218
45.52224
45.52194

Date: 10/20/20 Time: 8:30 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 _{RM1})	<u>1155.22</u>			Survey Equations: HI1 = GE _{RM1} + BS1 CE1 = HI1 - FS1
Back sight 1 (BS1)	+ <u>3.16</u>			
Height of Instrument (HI1)	<u>1158.38</u> - Staff Gauge	<u>8.30</u>	= <u>1150.08</u>	
	HI1 - Ref Mark 2	<u>3.37</u>	= <u>1155.01</u>	
	HI1 - Ref Mark 3	<u>3.36</u>	= <u>1155.02</u>	

Survey Stage 2 - Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation 1	<u>1150.08</u> ←			Survey Equations: HI2 = CE _{SG1} + BS2 CE2 = HI2 - FS2
Back sight 2 (BS2)	+ <u>8.10</u>			
Height of Instrument (HI2)	<u>1158.18</u> - Ref Mark 1	<u>2.96</u>	= <u>1155.22</u>	
	HI2 - Ref Mark 2	<u>3.17</u>	= <u>1155.01</u>	
	HI2 - Ref Mark 3	<u>3.15</u>	= <u>1155.03</u>	

Quality Assurance Checks

Reference Mark 1:	BS1 <u>3.16</u>	FS1 <u>8.30</u>	QA Equations:
GE = CE2	BS2 + <u>8.10</u>	FS2 + <u>2.96</u>	BS1 + BS2 = FS1 _{SG} + FS2 _{RM1}
	<u>11.26</u>	= <u>11.26</u>	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: 1.71 ft

Calculated Elevation 1 = 1150.11

WATER

6.56

1151.82 ELEV OF WATER

1060 E. Bone LK CT.

Wisconsin DNR - Lake Level Monitoring Staff Gauge Survey Data Sheet

6/29/2021

BOAT ON FACE

Lake Information

Lake Name

Bone LAKE

County

Polk

Data Collectors

Primary Data Collector

Email

Phone No.

Additional Data Collector(s)

45.52211944

92.37849083

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1)

Reference Mark Type:

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 STOOD SOUTH Side of House

Reference Mark #2 (RM2)

Reference Mark Type:

Latitude: 45-31-19.86

Longitude: 92-22-42.961

Mean Sea Level Yes No Elevation: 1155.02

Photograph

Location Description: SW Corner of Concrete PATIO @ JOINT where PATIO concrete STARTS TO CURVE Δ.01

Reference Mark #3 (RM3)

Reference Mark Type:

Latitude: 45-31-20.05

Longitude: 92-22-43.011

Mean Sea Level Yes No Elevation: 1155.01

Photograph

Location Description: NW Corner of Concrete PATIO @ JOINT @ End of curve of concrete Δ.01

Staff Gauge

Latitude: 45-31-18.994

Longitude: 92-22-45.042

Mean Sea Level Yes No Elevation: 1150.64

Photograph

Location Description:

Date: 6/29/2021 Time: 9:00 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 _{RM1})	<u>1155.22</u>		
Back sight 1 (BS1)	<u>+ 3.41</u>		
Height of Instrument (HI1)	<u>1158.63</u> - Staff Gauge	<u>7.99</u>	= <u>1150.64</u>
	HI1 - Ref Mark 2	<u>3.62</u>	= <u>1151.01</u>
	HI1 - Ref Mark 3	<u>3.61</u>	= <u>1155.02</u>

Survey Equations:
HI1 = GE_{RM1} + BS1
CE1 = HI1 - FS1

Survey Stage 2 - Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)
Calculated Elevation 1	<u>1150.64</u> ←		
Back sight 2 (BS2)	<u>+ 7.52</u>		
Height of Instrument (HI2)	<u>1158.16</u> - Ref Mark 1	<u>2.94</u>	= <u>1155.22</u>
	HI2 - Ref Mark 2	<u>3.15</u>	= <u>1155.01</u>
	HI2 - Ref Mark 3	<u>3.13</u>	= <u>1155.03</u>

Survey Equations:
HI2 = CE_{SG1} + BS2
CE2 = HI2 - FS2

Quality Assurance Checks

Reference Mark 1:	BS1 <u>3.41</u>	FS1 <u>7.99</u>	
GE = CE2	BS2 + <u>7.52</u>	FS2 + <u>2.94</u>	
	<u>10.93</u>	= <u>10.93</u>	

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: 1.11 ft

Calculated Elevation 1 = 1150.565

WATER ① 6.96 1151.67 ② 6.48 1151.68

1060 E. Bone LK CT.

Wisconsin DNR - Lake Level Monitoring Staff Gauge Survey Data Sheet

22 Sept 2021
11:06 AM

Lake Information
Lake Name Bone LAKE County Polk

Data Collectors
Primary Data Collector _____ Email _____ Phone No. _____
Additional Data Collector(s) 45.52211944 92.37849083

Reference Mark and Staff Gauge Information

Reference Mark #1 (RM1)
 Reference Mark Type: _____
 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 South Side of House

Reference Mark #2 (RM2)
 Reference Mark Type: _____
 Latitude: 45-31-19.86 Longitude: 92-22-42.961 Mean Sea Level Yes No Elevation: 1155.02 Photograph
 Location Description: SW Corner of Concrete PATIO @ JOINT where PATIO concrete STARTS TO CURVE

Reference Mark #3 (RM3)
 Reference Mark Type: _____
 Latitude: 45-31-20.05 Longitude: 92-22-43.011 Mean Sea Level Yes No Elevation: 1155.04 Photograph
 Location Description: NW Corner of Concrete PATIO @ JOINT @ End of Curve of Concrete

Staff Gauge
 Latitude: 45-31-18.994 Longitude: 92-22-45.042 Mean Sea Level Yes No Elevation: 1150.64 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)	
Given Elevation (GE _{RM1})			
Back sight 1 (BS1)			
Height of Instrument (HI1)			
HI1 - Staff Gauge	<u>7.82</u>	= <u>1150.74</u>	Survey Equations: HI1 = GE _{RM1} + BS1 CE1 = HI1 - FS1
HI1 - Ref Mark 2	<u>3.45</u>	= <u>1155.01</u>	
HI1 - Ref Mark 3	<u>3.44</u>	= <u>1155.02</u>	

Survey Stage 2 - Reset instrument at different height

Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)	
Calculated Elevation 1			
Back sight 2 (BS2)			
Height of Instrument (HI2)			
HI2 - Ref Mark 1	<u>2.98</u>	= <u>1155.24</u>	Survey Equations: HI2 = CE _{SG1} + BS2 CE2 = HI2 - FS2
HI2 - Ref Mark 2	<u>3.19</u>	= <u>1155.01</u>	
HI2 - Ref Mark 3	<u>3.18</u>	= <u>1155.02</u>	

Quality Assurance Checks

Reference Mark 1:	BS1 <u>3.24</u>	FS1 <u>7.82</u>	
GE = CE2	BS2 + <u>7.56</u>	FS2 + <u>2.98</u>	
	<u>10.80</u>	= <u>10.80</u>	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: 1.15 ft

Calculated Elevation = 1150.555

WATER 1st 6.76 1151.70 2ND 6.49 1151.71

SURMS 02
7/26/22

INSTALL

1060 E. Bone LK CT.

TOP OF BOARD

Wisconsin DNR - Lake Level Monitoring
Staff Gauge Survey Data Sheet

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 45.522119
- 92.378491 Elevation: 1155.22 Photograph
Location Description: SW Corner of HOUSE WTH Side of

Reference Mark #2 (RM2)
Latitude: 45-31-19.86 Longitude: 92-22-42.961 45.522183
- 92.3786 Elevation: 1155.02 Photograph
Location Description: SW Corner of where PANO concrete @ JOINT

Reference Mark #3 (RM3)
Latitude: 45-31-20.05 Longitude: 92-22-43.011 45.522236
- 92.378614 Elevation: 1155.04 Photograph
Location Description: NW Corner of @ End of curve @ JOINT

Staff Gauge
Latitude: 45-31-18.994 Longitude: 92-22-45.042 45.521943
- 92.379178 Elevation: _____ Photograph
Location Description: _____

Date: 7/26/2022 Time: 8:30 AM/PM: AM Check one: Install Midseason Removal

Survey Stage 1 - Instrument at first height

	Reference Mark 1	Fore sight (FS1)	Calculated Elevation (CE1)
Given Elevation (GE _{RM1})	<u>1155.22</u>		
Back sight 1 (BS1)	<u>+ 3.35</u>		
Height of Instrument (HI1)	<u>1158.57</u> - Staff Gauge	<u>3.97</u>	<u>1154.60</u>
	HI1 - Ref Mark 2	<u>3.54</u>	<u>1155.02</u>
	HI1 - Ref Mark 3	<u>3.53</u>	<u>1155.04</u>

Survey Equations:
HI1 = GE_{RM1} + BS1
CE1 = HI1 - FS1

Survey Stage 2 - Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)
Calculated Elevation 1	<u>1154.60</u> ←		
Back sight 2 (BS2)	<u>+ 3.78</u>		
Height of Instrument (HI2)	<u>1158.38</u> - Ref Mark 1	<u>3.16</u>	<u>1155.22</u>
	HI2 - Ref Mark 2	<u>3.36</u>	<u>1155.02</u>
	HI2 - Ref Mark 3	<u>3.35</u>	<u>1155.03</u>

Survey Equations:
HI2 = CE_{SG1} + BS2
CE2 = HI2 - FS2

Quality Assurance Checks:

Reference Mark 1:	BS1 <u>3.35</u>	FS1 <u>3.97</u>	
GE = CE2	BS2 <u>3.78</u>	FS2 <u>3.16</u>	
	<u>7.13</u>	<u>7.13</u>	

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: 0.81 ft 1151.62 1151.61 1150.805
WATER 6.95 6.77 ELEV OF WATER

REMOVAL SWIMS C2

1060 E. Bone LK CT.

Wisconsin DNR - Lake Level Monitoring
Staff Gauge Survey Data Sheet

TOP OF BOARD

OCT 4, 2022

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: _____
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 South Side of House

Reference Mark #2 (RM2) Reference Mark Type: _____
Latitude: 45-31-19.86 Longitude: 92-22-42.961 Mean Sea Level Yes No Elevation: 1155.02 Photograph
Location Description: SW Corner of Concrete PATIO @ JOINT where patio concrete starts to curve

Reference Mark #3 (RM3) Reference Mark Type: _____
Latitude: 45-31-20.05 Longitude: 92-22-43.011 Mean Sea Level Yes No Elevation: 1155.04 Photograph
Location Description: NW Corner of Concrete PATIO @ JOINT @ End of curve of concrete

Staff Gauge
Latitude: 45-31-18.994 Longitude: 92-22-45.042 Mean Sea Level Yes No Elevation: _____ 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)
Given Elevation (GE _{RM1})	<u>1155.22</u>		
Back sight 1 (BS1)	+ <u>3.08</u>		
Height of Instrument (HI1)	<u>1158.30</u> - Staff Gauge	<u>3.70</u>	= <u>1154.60</u>
	HI1 - Ref Mark 2	<u>3.28</u>	= <u>1155.02</u>
	HI1 - Ref Mark 3	<u>3.27</u>	= <u>1155.03</u>

Survey Equations:
HI1 = GE_{RM1} + BS1
CE1 = HI1 - FS1

Survey Stage 2 - Reset instrument at different height

	Staff Gauge	Fore sight (FS2)	Calculated Elevation (CE2)
Calculated Elevation 1	<u>1154.60</u>		
Back sight 2 (BS2)	+ <u>3.46</u>		
Height of Instrument (HI2)	<u>1158.06</u> - Ref Mark 1	<u>2.84</u>	= <u>1155.22</u>
	HI2 - Ref Mark 2	<u>3.05</u>	= <u>1155.01</u>
	HI2 - Ref Mark 3	<u>3.03</u>	= <u>1155.03</u>

Survey Equations:
HI2 = CE_{SG1} + BS2
CE2 = HI2 - FS2

Quality Assurance Checks:

Reference Mark 1: BS1 3.08 FS1 3.7 QA Equations:
GE = CE2 BS2 + 3.46 FS2 + 2.84 BS1 + BS2 = FS1_{SG} + FS2_{RM1}
6.54 = 6.54 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.

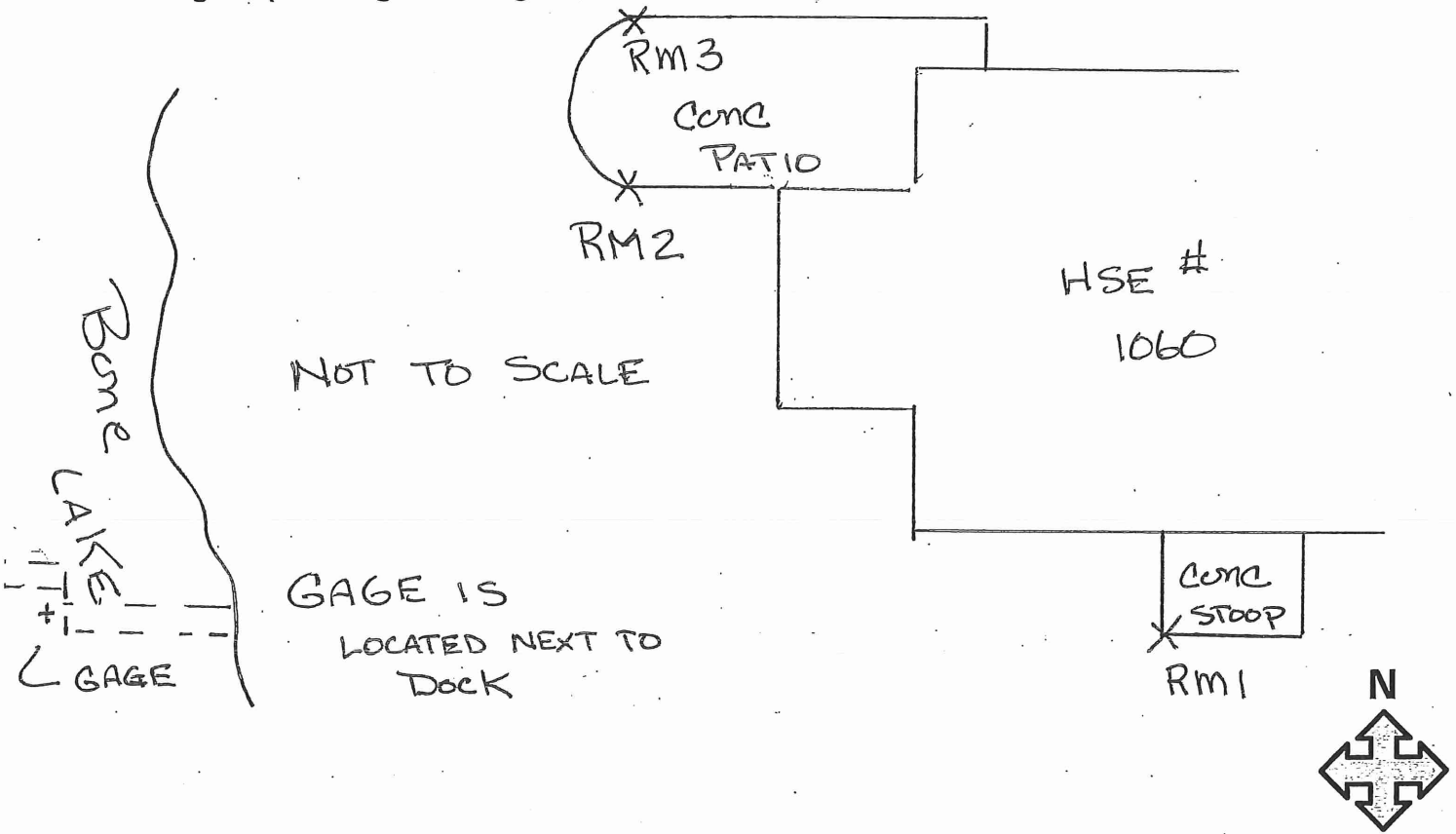
Lake Level Reading: 0.76 ft

Calculated Elevation 2 = 1150.8

WATER 6.74 1151.56 6.50 1151.56

Staff Gauge Survey Data Sheet

Site Diagram (including Staff Gauge and Reference Marks)



Notes

TRANSFERRED ELEU TO RMs
 From 2 TBMs IN open AREA
 to SOUTH, USED Survey GRADE
 GNSS Equipment to observe
 Vert. DATA DATUM: NAVD88

Data Management

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

Photographs 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: _____