



Mn/DOT Name: 1 EAST

NGS Name: 1 EAST

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8566](#)
NGS Quad / Sta Num : 47095414/
USGS Quad: GULLY NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	13	151 N	40 W	475422.77	954234.87		C	2008	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 12 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: 1 EAST 2008

8.0 MILES NORTHEAST OF OKLEE, 4.6 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND TRUNK HIGHWAY 222 IN OKLEE, THEN 7.0 MILES EAST ON COUNTY ROAD 1, 37.5 FEET WEST OF A TOWNSHIP ROAD, 34.0 FEET SOUTH OF COUNTY ROAD 1, 110.0 FEET SOUTHWEST OF A POWER POLE, 89.4 FEET WEST OF A TELEPHONE PEDESTAL, 4.0 FEET WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1162.104	.262			1071.996	.197	2011	GPS - OPUS	2020	GPSBM
1162.202	.262			1072.094	.197	2011	GPS - OPUS	2020	GPSBM
1161.986	.262			1071.878	.197	2011	GPS - RTRN	2020	RTRN2020
1162.150				1071.986	.023	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1162.150				1071.986	.023	2011	GPS - STATIC	2013	HTERR
1162.038	.131			1072.121	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -90.108 12B = -90.108 09 = -89.990 03 = -89.915

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Year</u> <u>Reference</u>
47 54 22.77022	95 42 34.86740			661146.433	249315.228	.131	3	GPS - OPUS	2020 GPSBM
47 54 22.77011	95 42 34.86733			661146.438	249315.217	.131	3	GPS - OPUS	2020 GPSBM
47 54 22.77149	95 42 34.86699			661146.460	249315.357	.131	3	GPS - RTRN	2020 RTRN2020
47 54 22.77040	95 42 34.86684			661146.471	249315.247	.016		ADJUSTMENT	2013 GPS2946
47 54 22.77040	95 42 34.86684			661146.471	249315.247	.016	C	GPS - STATIC	2013 HTERR

<u>NAD83(1996)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Year</u> <u>Reference</u>
47 54 22.77023	95 42 34.86795			661146.395	249315.229	.033	C	GPS - STATIC	2012 HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Year</u> <u>Reference</u>
1984756.132	851831.562			976085.894	17419397.670	.131	3	GPS - OPUS	2020 GPSBM
1984756.136	851831.551			976085.898	17419397.659	.131	3	GPS - OPUS	2020 GPSBM
1984756.164	851831.690			976085.926	17419397.798	.131	3	GPS - RTRN	2020 RTRN2020
1984756.171	851831.579			976085.933	17419397.687	.016		ADJUSTMENT	2013 GPS2946
1984756.171	851831.579			976085.933	17419397.687	.016	C	GPS - STATIC	2013 HTERR

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Year</u> <u>Reference</u>
1984756.094	851831.565			976085.857	17419397.672	.033	C	GPS - STATIC	2012 HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/1_EAST-DO8566-3S-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/1_EAST-DO8566-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/1_EAST-DO8566-1-16JUN2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020



Mn/DOT Name: 1 KEE

NGS Name: 1 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	31	150 N	43 W	474535.00	961209.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963) **Stamping:** 1 KEE 1963

5.0 MILES SOUTH AND 3.2 MILES WEST OF TERREBONNE, 3.0 MILES EAST ON COUNTY ROAD 28 FROM THE JUNCTION OF COUNTY ROAD 28 AND TRUNK HIGHWAY 32 AT MARCOUX CORNERS, 39.0 FEET NORTH AND 87.0 FEET WEST OF A TEE-ROAD SOUTH.

Station Notes

THE TIES FALL IN A DITCH, THE AREA HAS BEEN RE-GRADED AND DITCHED. BELIEVED TO BE REMOVED BY CONSTRUCTION.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1108.679	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Geoid Separations(ft): GEOID18 = -88.277 12B = -88.238 09 = -88.133 03 = -88.143

* No Horizontal Positions in the Database *



Mn/DOT Name: 10 KEE

NGS Name: 10 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	30	151 N	42 W	475235.00	960434.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	DESTROYED	Horz=NO Vert=NO	NO	63504		SEE DESCRIPTION

Monument Type

BRIDGE HEADWALL

Disk Type

SURVEY DISK

Mon. Agency

USGS

Description: (1963)

Stamping: 10 KEE 1963

3.0 MILES NORTH AND 2.8 MILES EAST OF TERREBONNE, 2.4 MILES SOUTH AND 1.6 MILES WEST OF PLUMMER, IN THE SOUTH END OF THE WEST HEADWALL OF COUNTY ROAD 20 BRIDGE NUMBER 63504 OVER THE CLEARWATER RIVER, 0.4 MILE SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 0.6 MILE WEST ALONG COUNTY ROAD 1, THEN 2.0 MILES SOUTH ALONG COUNTY ROAD 118, THEN 1.1 MILES WEST-NORTHWEST ALONG COUNTY HIGHWAY 20 (SOUTHEAST 200TH STREET), 11.0. FEET SOUTH OF COUNTY ROAD 20.

Station Notes

THE BRIDGE HAS BEEN REPLACED IN 1975.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1096.415	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT	

Geoid Separations(ft): GEOID18 = -89.150 12B = -89.048 09 = -88.993 03 = -88.989

* No Horizontal Positions in the Database *



Mn/DOT Name: 1085

NGS Name: 1085

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	151 N	44 W	475544.00	961326.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
	1973	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

IRON POST

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description:

Stamping: 1085

4.31 MILES NORTH OF RED LAKE FALLS, 0.4 MILE NORTH ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND COUNTY ROAD 54 (2ND STREET SOUTHEAST) IN RED LAKE FALLS, THEN 4.5 MILES EAST-NORTHEAST AND NORTH ALONG TRUNK HIGHWAY 32 NORTH (BRIDGE STREET NORTHEAST), ON THE WEST SIDE OF THE TRACKS, 8.0 FEET NORTHWEST OF RAILROAD MILEPOST 5.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1069.194	.033	3				VERTICAL CONTROL SURVEY	1979 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.189 12B = -89.048 09 = -89.042 03 = -89.091

* No Horizontal Positions in the Database *



Mn/DOT Name: 11 KEE

NGS Name: 11 KEE

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	26	151 N	42 W	475233.69	960035.07	2	

NGS ACRN: [SL0066](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2012	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2012)

Stamping: 11 KEE 1963

2.85 MILES SOUTHEAST OF PLUMMER, 2.15 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, THEN 0.5 MILE EAST ON A MAINTENANCE ROAD (200TH STREET SOUTHEAST), 192.0 FEET SOUTH OF AN EAST-WEST TOWNSHIP ROAD, 51.0 FEET EAST OF A NORTH-SOUTH TOWNSHIP ROAD, 0.4 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1140.218	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1140.339	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1140.339	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1139.109	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1139.109	.016	2				VERTICAL CONTROL SURVEY	1978	L24405
1139.148	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.255 12B = -89.160 09 = -89.101 03 = -89.075

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/11_KEE-SL0066-3E-07MAY2008.jpg	E	May 7, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/11_KEE-SL0066-2-07MAY2008.jpg		May 7, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/11_KEE-SL0066-1-07MAY2008.jpg		May 7, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 12 KEE

NGS Name: 12 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	12	151 N	42 W	475421.00	955915.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963)

Stamping: 12 KEE 1963

0.4 MILE SOUTH AND 2.5 MILES EAST OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 0.4 MILE SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 SOUTH, THEN 2.2 MILES EAST ALONG COUNTY ROAD 1, 61.0 FEET NORTH AND 243.0 FEET EAST OF THE CROSSROADS, 3.0 FEET NORTH OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1136.159	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.376 12B = -89.285 09 = -89.216 03 = -89.193

* No Horizontal Positions in the Database *



Mn/DOT Name: 13 KEE

NGS Name: 13 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8552](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	151 N	42 W	475539.12	960036.86		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2012) **Stamping:** 13 KEE 1963

1.85 MILES NORTHEAST OF PLUMMER, 1.05 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, TO TRUNK HIGHWAY 59 MILEPOINT 341.95, THEN 1.95 MILES EAST, NORTH, AND EAST ALONG COUNTY ROAD 126, 36.0 FEET SOUTH OF 165TH STREET SOUTHEAST, 22.0 FEET WEST OF 220TH AVENUE SOUTHEAST EXTENDED, 22.0 FEET WEST OF A FIELD ENTRANCE SOUTH, 2.2 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

Orthometric Height			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj	Determination Method	Year Reference
1127.337	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

Orthometric Height			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj	Determination Method	Year Reference
1128.538	.262		1039.184	.197	2011	GPS - OPUS	2022 GPSBM
1128.508	.262		1039.155	.197	2011	GPS - OPUS	2022 GPSBM
1128.410	.262		1039.060	.197	2011	GPS - RTRN	2021 RTRN2021
1128.584			1039.227	.020	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1128.584			1039.227	.020	2011	GPS - STATIC	2013 HTERR
1128.489	.262		1039.299	.197	2007	GPS - RTRN	2012 RTRN2012
1128.541	.131		1039.375	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -89.353 12B = -89.255 09 = -89.189 03 = -89.180

Lat/Lon and County Coordinates (Feet)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference	
47 55 39.12370	96 00 36.86314	587390.575	256569.135	.131	3	GPS - OPUS	2022 GPSBM	
47 55 39.12370	96 00 36.86335	587390.560	256569.134	.131	3	GPS - OPUS	2022 GPSBM	
47 55 39.12361	96 00 36.86229	587390.632	256569.126	.131	3	GPS - RTRN	2021 RTRN2021	
47 55 39.12292	96 00 36.86182	587390.665	256569.056	.020		ADJUSTMENT	2013 GPS2946	
47 55 39.12292	96 00 36.86182	587390.665	256569.056	.020	C	GPS - STATIC	2013 HTERR	

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference	
47 55 39.12301	96 00 36.86354	587390.548	256569.065	.131	3	GPS - RTRN	2012 RTRN2012	

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference	
47 55 39.12261	96 00 36.86285	587390.595	256569.024	.033	C	GPS - STATIC	2012 HTERR	

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911382.611	862193.618	902707.578	17429861.866	.131	3	GPS - OPUS	2022	GPSBM
1911382.597	862193.619	902707.564	17429861.867	.131	3	GPS - OPUS	2022	GPSBM
1911382.669	862193.607	902707.636	17429861.855	.131	3	GPS - RTRN	2021	RTRN2021
1911382.698	862193.536	902707.665	17429861.784	.020		ADJUSTMENT	2013	GPS2946
1911382.698	862193.536	902707.665	17429861.784	.020	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911382.581	862193.550	902707.548	17429861.797	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911382.627	862193.507	902707.594	17429861.755	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/13_KEE-DO8552-3S-21OCT2021.jpg	S	Oct 21, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/13_KEE-DO8552-2-21OCT2021.jpg		Oct 21, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/13_KEE-DO8552-1-21OCT2021.jpg		Oct 21, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 14 KEE

NGS Name: 14 KEE

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO8551 Get Map
NE	27	152 N	42 W	475749.89	960039.43		C	NGS Quad / Sta Num : 47096111/ USGS Quad: PLUMMER

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2012)

Stamping: 14 KEE 1963

3.95 MILES NORTHEAST OF PLUMMER, 4.2 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, TO TRUNK HIGHWAY 59 MILEPOINT 345.1, THEN 2.0 MILES EAST ALONG 40TH STREET SOUTHEAST/ COUNTY ROAD 52 (COUNTY LINE ROAD), 41.0 FEET SOUTH OF COUNTY ROAD 125/ 40TH STREET SOUTHEAST, 68.0 FEET WEST OF 220TH AVENUE SOUTHEAST, 85.1 FEET SOUTH-SOUTHWEST OF A POWER POLE WITH A GUY WIRE, 1.8 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1126.894	.033	3				VERTICAL CONTROL SURVEY		1963	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1128.544	.262		1039.217	.197	2011	GPS - OPUS		2022	GPSBM
1128.495	.262		1039.168	.197	2011	GPS - OPUS		2022	GPSBM
1128.361	.262		1039.033	.197	2011	GPS - RTRN		2021	RTRN2021
1128.452			1039.125	.021	2011	HORIZONTAL ADJUSTMENT		2013	GPS2946
1128.452			1039.125	.021	2011	GPS - STATIC		2013	HTERR
1128.282	.262		1039.112	.197	2007	GPS - RTRN		2012	RTRN2012
1128.410	.131		1039.233	.066	1996	GPS - STATIC		2012	HTERR

Geoid Separations(ft): GEOID18 = -89.327 12B = -89.235 09 = -89.166 03 = -89.173

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 49.89442	96 00 39.42493	587155.112	269819.931	.131	3	GPS - OPUS	2022	GPSBM
47 57 49.89442	96 00 39.42526	587155.090	269819.931	.131	3	GPS - OPUS	2022	GPSBM
47 57 49.89471	96 00 39.42429	587155.156	269819.961	.131	3	GPS - RTRN	2021	RTRN2021
47 57 49.89494	96 00 39.42360	587155.203	269819.985	.013		ADJUSTMENT	2013	GPS2946
47 57 49.89494	96 00 39.42360	587155.203	269819.985	.013	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 49.89472	96 00 39.42587	587155.048	269819.962	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 49.89452	96 00 39.42504	587155.105	269819.942	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911707.133	875440.724	903050.459	17443112.702	.131	3	GPS - OPUS	2022	GPSBM
1911707.110	875440.725	903050.436	17443112.703	.131	3	GPS - OPUS	2022	GPSBM
1911707.177	875440.751	903050.503	17443112.730	.131	3	GPS - RTRN	2021	RTRN2021
1911707.225	875440.773	903050.551	17443112.751	.013		ADJUSTMENT	2013	GPS2946
1911707.225	875440.773	903050.551	17443112.751	.013	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911707.070	875440.756	903050.396	17443112.735	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911707.126	875440.734	903050.452	17443112.713	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/14_KEE-DO8551-3S-21OCT2021.jpg	S	Oct 21, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/14_KEE-DO8551-2-21OCT2021.jpg		Oct 21, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/14_KEE-DO8551-1-21OCT2021.jpg		Oct 21, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 15 KEE

NGS Name: 15 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8561](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	22	150 N	43 W	474720.05	960819.58		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963) **Stamping:** 15 KEE 1963

3.2 MILES SOUTH OF TERREBONNE, 6.0 MILES EAST ALONG COUNTY ROAD 49 FROM THE JUNCTION OF COUNTY ROAD 49 AND TRUNK HIGHWAY 32 IN MARCOUX, THEN 2.0 MILES NORTH ON COUNTY ROAD 12, 42.6 FEET WEST OF COUNTY ROAD 12 (160TH AVENUE SOUTHEAST), 42.4 FEET NORTH OF 200TH STREET SOUTHEAST, 3.4 FEET EAST OF A POWER POLE NUMBER 44, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

THE MARK IS CHIPPED BUT STABLE.

Leveling-Derived Orthometric Heights (Feet)

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1107.842	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1109.233	.262		1020.716	.197	2011	GPS - OPUS	2022	GPSBM
1109.168	.262		1020.651	.197	2011	GPS - OPUS	2022	GPSBM
1109.053	.262		1020.539	.197	2011	GPS - RTRN	2021	RTRN2021
1109.279			1020.733	.024	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1109.279			1020.733	.024	2011	GPS - STATIC	2013	HTERR
1109.283	.131		1020.917	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.514 12B = -88.461 09 = -88.356 03 = -88.369

Lat/Lon and County Coordinates (Feet)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 20.04601	96 08 19.57942	556025.600	205876.693	.131	3	GPS - OPUS	2022	GPSBM
47 47 20.04630	96 08 19.57970	556025.581	205876.723	.131	3	GPS - OPUS	2022	GPSBM
47 47 20.04688	96 08 19.57879	556025.643	205876.781	.131	3	GPS - RTRN	2021	RTRN2021
47 47 20.04699	96 08 19.57868	556025.650	205876.793	.020		ADJUSTMENT	2013	GPS2946
47 47 20.04699	96 08 19.57868	556025.650	205876.793	.020	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 20.04656	96 08 19.57969	556025.582	205876.749	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1877908.574	812878.278	869156.589	17380573.833	.131	3	GPS - OPUS	2022	GPSBM
1877908.556	812878.309	869156.571	17380573.863	.131	3	GPS - OPUS	2022	GPSBM
1877908.620	812878.365	869156.636	17380573.919	.131	3	GPS - RTRN	2021	RTRN2021
1877908.628	812878.376	869156.644	17380573.930	.020		ADJUSTMENT	2013	GPS2946
1877908.628	812878.376	869156.644	17380573.930	.020	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1877908.558	812878.335	869156.573	17380573.889	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/15_KEE-DO8561-3W-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/15_KEE-DO8561-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/15_KEE-DO8561-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 16 CLC A TBM

NGS Name: 16 CLC A TBM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0651](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	150 N	41 W	474630.00	955246.00	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	1967	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ROCK (0 TO 1 METERS)	CHISELED SQUARE	USGS

Description: (1967)

Stamping: 16 CLC A TBM

9.6 MILES NORTH FROM MCINTOSH, 4.6 MILES SOUTH-SOUTHWEST OF OKLEE, 0.2 MILE EAST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 3.0 MILES SOUTH ALONG TRUNK HIGHWAY 92 EAST, THEN 0.9 MILE WEST ALONG COUNTY ROAD 8, THEN 0.1 MILE WEST ALONG COUNTY HIGHWAY 7, 0.9 MILE NORTH ALONG COUNTY HIGHWAY 8 FROM TABLET, NEAR THE CENTER OF A LARGE CURVE, NEAR THE CENTER OF A LARGE RECTANGLE, AT THE NORTH END OF A SMALL POND, 0.5 FOOT LOWER THAN THE HIGHWAY, IN THE CENTER OF A SMALL BOULDER.

Station Notes

THE SET DATE IS UNKNOWN. TEMPORARY BENCHMARK 16 CLC A, A CHISELED SQUARE

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1179.279	.033	3				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -89.140 12B = -89.107 09 = -88.993 03 = -88.953

* No Horizontal Positions in the Database *



Mn/DOT Name: 16 CLC RM

NGS Name: 16 CLC RM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0650](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	150 N	41 W	474541.00	955249.00	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	1967	SEE DESCRIPTION	Horz=NO Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE/BITUMINOUS SLAB

Disk Type

DRILL HOLE

Mon. Agency

USGS

Description: (1967)

Stamping: 16 CLC RM

8.7 MILES NORTH FROM MCINTOSH, 5.5 MILES SOUTH-SOUTHWEST OF OKLEE, 0.2 MILE EAST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 3.0 MILES SOUTH ALONG TRUNK HIGHWAY 92 EAST, THEN 0.9 MILE WEST ALONG COUNTY ROAD 8, THEN 1.0 MILE SOUTH ALONG COUNTY ROAD 8, 728.0 FEET NORTH, 80.0 FEET WEST OF TABLET, 157.0 FEET NORTH, 25.0 FEET WEST AND 4.2 FEET LOWER THAN THE RED LAKE AND POLK COUNTY LINE, ON THE WEST END OF A METAL CORRUGATED CULVERT. THE REFERENCE MARK IS A PUNCHED HOLE.

Station Notes

THE SET DATE IS UNKNOWN. NOT SEARCHED FOR.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1179.725	.033	3				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -89.147 12B = -89.114 09 = -89.002 03 = -88.960

* No Horizontal Positions in the Database *



Mn/DOT Name: 16 KEE

NGS Name: 16 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	33	150 N	42 W	474538.00	960300.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963)

Stamping: 16 KEE 1963

5.0 MILES SOUTH AND 3.9 MILES EAST OF TERREBONNE, 3.7 MILES SOUTH AND 2.1 MILES WEST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 4.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 SOUTH, THEN 2.3 MILES WEST ALONG COUNTY ROAD 209, 42.0 FEET NORTH AND 595.0 FEET EAST OF THE CROSSROADS, 2.0 FEET NORTH OF A FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1138.767	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -88.523 12B = -88.461 09 = -88.346 03 = -88.373

* No Horizontal Positions in the Database *



Mn/DOT Name: 17 CLC

NGS Name: 17 CLC

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0652](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	35	150 N	41 W	474631.00	955143.00	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2008	NOT FOUND	Horz=YES Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	USGS

Description: (2002) Stamping: 17 CLC 1967

4.0 MILES SOUTH OF OKLEE, 0.3 MILE WEST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 92, 33.0 FEET SOUTH OF COUNTY ROAD 8, 83.0 FEET WEST OF A FARM ENTRANCE.

Station Notes

THE GEODETIC UNIT COULD NOT FIND THE MARK IN 2002.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1176.097	.033	3				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1175.040	.033	3				VERTICAL CONTROL SURVEY	1971	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.153 12B = -89.134 09 = -89.016 03 = -88.960

* No Horizontal Positions in the Database *



Mn/DOT Name: 17 CLC A TBM

NGS Name: 17 CLC A TBM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0654](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	25	150 N	41 W	474632.00	955014.00	3	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1967	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

WALL

Disk Type

CHISELED SQUARE

Mon. Agency

USGS

Description: (1967)

Stamping: 17 CLC A TBM

7.0 MILES WEST FROM TRAIL, 1.1 MILES EAST ALONG TRUNK HIGHWAY 92 FROM TABLET, 4.6 MILES SOUTH-SOUTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 3.0 MILES SOUTH AND EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 49.0 FEET NORTH OF TRUNK HIGHWAY 92, 28.0 FEET NORTH, 48.0 FEET WEST AND 4.0 FEET LOWER THAN THE CROSSROADS, ON THE NORTH END OF A CONCRETE CULVERT.

Station Notes

THE SET DATE IS UNKNOWN. TEMPORARY BENCHMARK 17 CLC A

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1178.259	.033	3				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -89.163 12B = -89.163 09 = -89.035 03 = -88.970

* No Horizontal Positions in the Database *



Mn/DOT Name: 17 CLC RM

NGS Name: 17 CLC RM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0653](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	35	150 N	41 W	474632.00	955141.00	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2008	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE/BITUMINOUS SLAB	DRILL HOLE	USGS

Description: (1967)

Stamping: 17 CLC RM

8.1 MILES WEST FROM TRAIL, 4.4 MILES SOUTH-SOUTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 3.0 MILES SOUTH ALONG TRUNK HIGHWAY 92 EAST, THEN 0.2 MILE SOUTHWEST ALONG COUNTY ROAD 8, 119.0 FEET EAST OF TABLET ON THE WEST END OF A METAL CORRUGATED CULVERT. THE REFERENCE MARK IS A PUNCHED HOLE.

Station Notes

THE SET DATE IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1174.607	.033	3				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -89.153 12B = -89.134 09 = -89.016 03 = -88.960

* No Horizontal Positions in the Database *



Mn/DOT Name: 17 KEE USGS

NGS Name: 17 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0080](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	23	150 N	42 W	474813.92	960001.44	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2012	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 2 IN.	STEEL SPIKE ADJ TO MON

Monument Type

UNKNOWN

Disk Type

BENCH MARK DISK

Mon. Agency

USGS

Description: (2003)

Stamping: 17 KEE 1963

0.75 MILE SOUTH OF BROOKS, 3.0 MILES NORTH OF THE POLK-RED LAKE COUNTY LINE, 1.0 MILE SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 333.65, 250.0 FEET WEST OF TRUNK HIGHWAY 59, 56.2 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 3.5 FEET SOUTHEAST OF A POWER POLE, 48.3 FEET EAST-SOUTHEAST OF A RAILROAD CULVERT MARKER POST NUMBER 283.19, 74.0 FEET SOUTH OF AN EAST-WEST FIELD ROAD, 0.8 FOOT WEST OF A WITNESS POST. FOUND THE CONCRETE LOOSE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1130.710	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1129.515	.016	2				VERTICAL CONTROL SURVEY	1978	L24405
1129.335	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1130.861	.262		1042.130	.197	1996	GPS - RTRN	2008	RTRN2008
1130.706	.262		1042.199	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -88.901 12B = -88.832 09 = -88.724 03 = -88.727

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 13.91586	96 00 01.44444	590016.604	211466.170	.131	3	GPS - RTRN	2008	RTRN2008
47 48 13.91635	96 00 01.44241	590016.743	211466.220	.131	3	ADJUSTMENT	1999	17648
47 48 13.91394	96 00 01.43722	590017.098	211465.977	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 13.91398	96 00 01.43718	590017.101	211465.981	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 48 14.04954	96 00 00.31600			.100	3	CLASSICAL SURVEY	1978	16128



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912100.695	817026.152	903365.865	17384679.138	.131	3	GPS - RTRN	2008	RTRN2008
1912100.835	817026.197	903366.005	17384679.183	.131	3	ADJUSTMENT	1999	17648
1912101.180	817025.939	903366.350	17384678.925	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912101.183	817025.943	903366.353	17384678.929	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1287489.177	488952.067			.100	3	CLASSICAL SURVEY	1978	16128

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/17_KEE-SL0080-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/17_KEE-SL0080-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/17_KEE-SL0080-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 1929 ADJ NO 19

NGS Name: 1929 ADJ NO 19

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	150 N	43 W	474955.00	960815.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1929	1963	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	SURVEY DISK	USGS

Description: (1963)

Stamping: 1929 ADJ NO 19

0.2 MILE WEST OF TERREBONNE, IN THE EAST END OF THE SOUTH HEADWALL OF A CONCRETE BOX CULVERT, 0.2 MILE WEST ALONG TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12) FROM THE JUNCTION OF TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12) IN TERREBONNE, 21.0 FEET SOUTH AND 54.0 FEET EAST OF A TEE-ROAD SOUTH.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1090.811	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -88.868 12B = -88.776 09 = -88.714 03 = -88.717

* No Horizontal Positions in the Database *



Mn/DOT Name: 2 JWO

NGS Name: 2 JWO

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095413/
USGS Quad: TRAIL

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	25	151 N	40 W	475207.00	954451.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1971	2010	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

COPPER CLAD ROD (NO SLEEVE)

Disk Type

SURVEY DISK

Mon. Agency

USGS

Description: (1971)

Stamping: 2 JWO 1971

2.0 MILES WEST OF TRAIL, 1.8 MILES NORTHWEST AND WEST ALONG TRUNK HIGHWAY 92 WEST (SOO AVENUE WEST) FROM THE JUNCTION OF TRUNK HIGHWAY 92 WEST (SOO AVENUE WEST) AND COUNTY HIGHWAY 28 (1ST AVENUE) IN TRAIL, THEN 1.2 MILES NORTH ALONG COUNTY HIGHWAY 6, THEN 0.8 MILE NORTH ALONG COUNTY ROAD 6, THEN 2.5 MILES NORTH ALONG COUNTY HIGHWAY 6, THEN 1.0 MILE WEST ALONG COUNTY ROAD 6, THEN 1.4 MILES NORTH ALONG COUNTY ROAD 137, 5.9 MILES NORTH OF TRUNK HIGHWAY 92, 1.4 MILES NORTH ON COUNTY ROAD 136 FROM THE SOUTH COUNTY LINE, 41.0 FEET EAST OF COUNTY ROAD 136, 28.0 FEET NORTH OF A FENCE CORNER, 1.0 FOOT WEST OF A WITNESS POST.

Station Notes

MOST OF THE TIES ARE GONE. PROBABLY REMOVED BY DITCHING.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1157.701	.033	3				VERTICAL CONTROL SURVEY	1973 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.839 12B = -89.826 09 = -89.705 03 = -89.642

* No Horizontal Positions in the Database *



Mn/DOT Name: 3 JWO

NGS Name: 3 JWO

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	151 N	40 W	475332.00	954508.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1971	2010	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

COPPER CLAD ROD (NO SLEEVE)

Disk Type

SURVEY DISK

Mon. Agency

USGS

Description: (1971)

Stamping: 3 JWO 1971

3.5 MILES NORTH AND 5.0 MILES EAST OF OKLEE, 3.8 MILES SOUTH-SOUTHEAST OF ROLAND, 0.5 MILE SOUTH ALONG COUNTY ROAD 10 FROM THE JUNCTION OF COUNTY ROAD 10 AND COUNTY ROAD 10, 0.2 MILE EAST-SOUTHEAST OF ROLAND, THEN 1.0 MILE EAST ALONG COUNTY ROAD 137, THEN 2.0 MILES SOUTH ALONG COUNTY ROAD 137, THEN 1.0 MILE SOUTH ALONG COUNTY ROAD 137, 91.0 FEET NORTH AND 33.0 FEET WEST OF COUNTY ROAD 137 AND A TOWNSHIP ROAD (CROSSROADS), 47.0 FEET NORTH OF A FENCE CORNER, 1.0 FOOT EAST OF A WITNESS SIGN.

Station Notes

FOUND THE ROD BENT OVER AND THE CAP MISSING.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1157.206	.033	3				VERTICAL CONTROL SURVEY	1973 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.928 12B = -89.915 09 = -89.800 03 = -89.728

* No Horizontal Positions in the Database *



Mn/DOT Name: 4 JWO

NGS Name: 4 JWO

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	151 N	40 W	475607.15	954509.58		C

NGS ACRN: [DO8545](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1971	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE)	SURVEY DISK	USGS

Description: (2012)

Stamping: 4 JWO 1971

6.5 MILES NORTH AND 5.0 MILES EAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 MILE NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 4.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 3.9 MILES EAST ALONG COUNTY ROAD 1, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 10, THEN 1.0 MILE EAST ALONG COUNTY ROAD 137, 70.0 FEET SOUTH OF 160TH STREET SOUTHEAST AND 55.0 FEET EAST OF 340TH AVENUE SOUTHEAST, 2.7 FEET NORTH-NORTHEAST OF A POWER POLE, 1.9 FEET EAST OF A WITNESS POST.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1153.613	.033	3				VERTICAL CONTROL SURVEY	1973	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1154.978	.262		1064.972	.197	2011	GPS - OPUS	2022	GPSBM
1155.030	.262		1065.024	.197	2011	GPS - OPUS	2022	GPSBM
1154.866	.262		1064.860	.197	2011	GPS - RTRN	2021	RTRN2021
1154.981			1064.939	.023	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1154.981			1064.939	.023	2011	GPS - STATIC	2013	HTERR
1154.886	.131		1065.063	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -90.006 12B = -89.990 09 = -89.892 03 = -89.816

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 07.15229	95 45 09.57834	650521.527	259805.800	.131	3	GPS - OPUS	2022	GPSBM
47 56 07.15232	95 45 09.57776	650521.567	259805.804	.131	3	GPS - OPUS	2022	GPSBM
47 56 07.15251	95 45 09.57733	650521.596	259805.823	.131	3	GPS - RTRN	2021	RTRN2021
47 56 07.15292	95 45 09.57696	650521.621	259805.865	.016		ADJUSTMENT	2013	GPS2946
47 56 07.15292	95 45 09.57696	650521.621	259805.865	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 07.15273	95 45 09.57828	650521.531	259805.845	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1974585.310	862760.159	965927.764	17430342.295	.131	3	GPS - OPUS	2022	GPSBM
1974585.350	862760.161	965927.804	17430342.297	.131	3	GPS - OPUS	2022	GPSBM
1974585.380	862760.179	965927.834	17430342.315	.131	3	GPS - RTRN	2021	RTRN2021
1974585.406	862760.219	965927.860	17430342.356	.016		ADJUSTMENT	2013	GPS2946
1974585.406	862760.219	965927.860	17430342.356	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1974585.316	862760.203	965927.770	17430342.340	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/4_JWO-DO8545-3E-21OCT2021.jpg	E	Oct 21, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/4_JWO-DO8545-2-21OCT2021.jpg		Oct 21, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/4_JWO-DO8545-1-21OCT2021.jpg		Oct 21, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 48 RDS

NGS Name: 48 RDS

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	23	151 N	45 W	475239.00	962227.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1951	2010	NOT FOUND	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SURVEY DISK

Mon. Agency

USGS

Description: (1978)

Stamping: 48 RDS 1951

1.0 MILE NORTH AND 2.5 MILES EAST OF HUOT, 1.0 MILE SOUTH AND 5.0 MILES WEST OF RED LAKE FALLS, 2.9 MILES EAST ALONG COUNTY ROAD 18 FROM THE JUNCTION OF COUNTY ROAD 18 AND COUNTY ROAD 104, 0.8 MILE NORTH OF HUOT, THEN 325.0 FEET SOUTHEAST ALONG 100 STREET SOUTHWEST, THEN 0.9 MILE SOUTH ALONG 150TH STREET SOUTHWEST, 0.3 MILE NORTH OF THE RED LAKE RIVER, 681.0 FEET NORTH AND 42.0 FEET WEST OF A ROAD AT A TRAIL EAST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
969.804	.033	3				VERTICAL CONTROL SURVEY	1979 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.062 12B = -88.947 09 = -88.940 03 = -88.957

* No Horizontal Positions in the Database *



Mn/DOT Name: 49 RDS

NGS Name: 49 RDS

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	12	151 N	45 W	475435.00	962227.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1951	1986	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1986)

Stamping: 49 RDS 1951

1.3 MILES NORTH AND 5.0 MILES WEST OF RED LAKE FALLS, 3.8 MILES NORTHEAST OF HUOT, 4.2 MILES EAST AND NORTH ALONG COUNTY ROAD 18 FROM THE JUNCTION OF COUNTY ROAD 18 AND COUNTY ROAD 104, 0.8 MILE NORTH OF HUOT, 0.3 MILE NORTH AND 45.0 FEET EAST OF THE CROSSROADS, 39.0 FEET NORTH AND 55.0 FEET EAST OF A RAILROAD CROSSING, 55.0 FEET NORTH OF A RAILROAD.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
987.022	.033	3				VERTICAL CONTROL SURVEY	1979 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.081 12B = -88.973 09 = -88.963 03 = -88.983

* No Horizontal Positions in the Database *



Mn/DOT Name: 5 KEE

NGS Name: 5 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	151 N	44 W	475233.00	961421.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963) **Stamping:** 5 KEE 1963

1.5 MILES EAST OF RED LAKE FALLS, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND COUNTY ROAD 54 (2ND STREET SOUTHEAST) IN RED RIVER FALLS, THEN 0.3 MILE EAST-SOUTHEAST ALONG BRIDGE STREET NORTHEAST, THEN 0.2 MILE SOUTH ALONG HAMILTON AVENUE NORTHEAST, THEN 1.6 MILES EAST AND SOUTH ALONG COUNTY ROAD 1 (1ST STREET NORTHEAST), 34.0 FEET SOUTH AND 248.0 FEET EAST OF COUNTY ROAD 1 AT A TEE-ROAD SOUTH, 32.0 FEET EAST OF A POWER POLE, 3.0 FEET NORTH OF A FENCE.

Station Notes

SEE 5 KEE RESET.

Leveling-Derived Orthometric Heights (Feet)

NGVD29									
Orthometric Height			Ellipsoid (NAD83)			Project Info			
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference	
1037.488	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT	
Geoid Separations(ft): GEOID18 = -89.088 12B = -88.979 09 = -88.940 03 = -88.966									
* No Horizontal Positions in the Database *									



Mn/DOT Name: 5 KEE RESET

NGS Name: 5 KEE RESET

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	151 N	44 W	475233.00	961421.00		

NGS ACRN:
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1972	2010	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1972)

Stamping: 5 KEE RESET 1972

1.5 MILES EAST OF RED LAKE FALLS, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND COUNTY ROAD 54 (2ND STREET SOUTHEAST) IN RED RIVER FALLS, THEN 0.3 MILE EAST-SOUTHEAST ALONG BRIDGE STREET NORTHEAST, THEN 0.2 MILE SOUTH ALONG HAMILTON AVENUE NORTHEAST, THEN 1.6 MILES EAST AND SOUTH ALONG COUNTY ROAD 1 (1ST STREET NORTHEAST), 65.0 FEET SOUTH AND 248.0 FEET EAST OF COUNTY ROAD 1 AT A TEE-ROAD SOUTH, 1.0 FOOT SOUTH OF A WITNESS POST.

Station Notes

FOUND A BROKEN OFF WITNESS POST AND A BROKEN CONCRETE MONUMENT, NO DISK WAS FOUND.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1034.273	.033	3				VERTICAL CONTROL SURVEY	1979	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.088 12B = -88.979 09 = -88.940 03 = -88.966

* No Horizontal Positions in the Database *



Mn/DOT Name: 50 RDS

NGS Name: 50 RDS

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	152 N	45 W	475647.30	962226.51		

NGS ACRN:
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1951	2010	FAIR	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1951)

Stamping: 50 RDS TT 1951

6.5 MILES NORTHWEST OF RED LAKE FALLS, 7.75 MILES NORTHWESTERLY ALONG COUNTY ROAD 13 FROM THE JUNCTION OF COUNTY ROAD 13 AND TRUNK HIGHWAY 32 AT THE NORTH EDGE OF RED LAKE FALLS, THEN 0.85 MILE NORTH OF COUNTY ROAD 101 (150TH AVENUE SOUTHWEST), 876.0 FEET SOUTH OF A TEE-ROAD WEST, 876.0 FEET SOUTH AND 36.0 FEET EAST OF COUNTY ROAD 1 AT A TEE-ROAD WEST, 335.0 FEET SOUTH AND 39.0 FEET WEST OF THE SOUTHWEST CORNER OF A CHURCH, 36.5 FEET EAST OF 150TH AVENUE SOUTHWEST, 171.5 FEET SOUTH OF DRIVEWAY FIRE NUMBER 15134, 34.0 FEET NORTH OF A FENCE CORNER, 59.3 FEET NORTH OF THE NORTH ENTRANCE TO THE IMMANUEL LUTHERAN CEMETERY, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

THE MARK HAS BEEN CHIPPED BUT IS STABLE.

GPS OPEN TO THE NORTH, SOUTH AND WEST. BLOCKED TO THE EAST BY TREES.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
997.616	.033	3				VERTICAL CONTROL SURVEY	1979	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.101 12B = -89.009 09 = -88.993 03 = -89.009

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/50_RDS-3E-17MAY2010.jpg	E	May 17, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/50_RDS-2-17MAY2010.jpg		May 17, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/50_RDS-1-17MAY2010.jpg		May 17, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 52 RDS

NGS Name: 52 RDS

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	14	150 N	44 W	474904.00	961446.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1951	2008	GOOD	Horz=YES Vert=YES	YES		PROJECTS 3 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	USGS

Description: (2008)

Stamping: 52 RDS TT 1951

5.0 MILES SOUTH AND 1.0 MILE EAST OF RED LAKE FALLS, 4.6 MILES SOUTH AND SOUTHEAST ALONG TRUNK HIGHWAY 32 SOUTH (MAIN STREET) FROM THE JUNCTION OF TRUNK HIGHWAY 32 SOUTH (MAIN STREET) AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 1.0 MILE EAST ALONG COUNTY ROAD 117, 1.0 MILE EAST OF A SCHOOLHOUSE, 31.0 FEET SOUTH AND 306.0 FEET WEST OF THE CROSSROADS, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1067.554	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Geoid Separations(ft): GEOID18 = -88.802 12B = -88.720 09 = -88.668 03 = -88.668

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/52_RDS-3S-08MAY2008.jpg	S	May 8, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/52_RDS-2-08MAY2008.jpg		May 8, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/52_RDS-1-08MAY2008.jpg		May 8, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6 EAST

NGS Name: 6 EAST

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8567](#) [Get Map](#)
NGS Quad / Sta Num : 47095413/
USGS Quad: TRAIL

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	36	151 N	40 W	475055.38	954233.57		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (<10 FT) (DEPTH 10 FT)	SURVEY DISK	MN-125

Description: (2013)

Stamping: 6 EAST 2008

6.6 MILES NORTHEAST OF OKLEE, 0.5 MILE NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND TRUNK HIGHWAY 222 IN OKLEE, THEN 7.0 MILES EAST ON COUNTY ROAD 6, 115.3 FEET EAST OF A POWER POLE, 80.5 FEET NORTHWEST OF THE NORTH END OF A CORRUGATED PIPE, 45.0 FEET NORTH OF COUNTY ROAD 6, 40.2 FEET WEST OF A TOWNSHIP ROAD, 2.1 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1157.002	.262		1067.173	.197	2011	GPS - OPUS	2020	GPSBM
1156.861	.262		1067.032	.197	2011	GPS - OPUS	2020	GPSBM
1156.737	.262		1066.911	.197	2011	GPS - RTRN	2020	RTRN2020
1156.950			1067.068	.021	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1156.950			1067.068	.021	2011	GPS - STATIC	2013	HTERR
1156.855	.131		1067.199	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.829 12B = -89.826 09 = -89.698 03 = -89.652

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 50 55.37933	95 42 33.56806	661413.692	228300.923	.131	3	GPS - OPUS	2020	GPSBM
47 50 55.37962	95 42 33.56802	661413.694	228300.952	.131	3	GPS - OPUS	2020	GPSBM
47 50 55.38064	95 42 33.56799	661413.695	228301.056	.131	3	GPS - RTRN	2020	RTRN2020
47 50 55.37988	95 42 33.56764	661413.720	228300.979	.013		ADJUSTMENT	2013	GPS2946
47 50 55.37988	95 42 33.56764	661413.720	228300.979	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 50 55.37960	95 42 33.56849	661413.662	228300.950	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1984135.419	830827.599	975437.140	17398390.324	.131	3	GPS - OPUS	2020	GPSBM
1984135.423	830827.628	975437.144	17398390.353	.131	3	GPS - OPUS	2020	GPSBM
1984135.429	830827.732	975437.150	17398390.456	.131	3	GPS - RTRN	2020	RTRN2020
1984135.450	830827.654	975437.171	17398390.378	.013		ADJUSTMENT	2013	GPS2946
1984135.450	830827.654	975437.171	17398390.378	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1984135.391	830827.627	975437.112	17398390.352	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6_EAST-DO8567-3N-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6_EAST-DO8567-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6_EAST-DO8567-1-16JUN2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020



Mn/DOT Name: 6 KEE

NGS Name: 6 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	20	151 N	43 W	475233.00	961057.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1972	UNKNOWN	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963)

Stamping: 6 KEE 1963

4.0 MILES EAST OF RED LAKE FALLS, 0.4 MILE NORTH ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.3 MILE EAST ALONG BRIDGE STREET NORTHEAST, THEN 0.2 MILE SOUTH ALONG HAMILTON AVENUE NORTHEAST, THEN 4.2 MILES EAST AND SOUTH ALONG COUNTY ROAD 1 (1ST STREET NORTHEAST), 53.0 FEET SOUTH AND 28.0 FEET WEST OF THE CROSSROADS, 2.0 FEET SOUTHEAST OF A POWER POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1068.249	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.078 12B = -88.970 09 = -88.927 03 = -88.947

* No Horizontal Positions in the Database *



Mn/DOT Name: 6 KEE RESET

NGS Name: 6 KEE RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8562](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	20	151 N	43 W	475233.82	961059.21		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1972	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2008) **Stamping:** 6 KEE RESET 1963 1972

4.0 MILES EAST OF RED LAKE FALLS, 0.4 MILE NORTH ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.3 MILE EAST ALONG BRIDGE STREET NORTHEAST, THEN 0.2 MILE SOUTH ALONG HAMILTON AVENUE NORTHEAST, THEN 4.2 MILES EAST AND SOUTH ALONG COUNTY ROAD 1 (1ST STREET NORTHEAST), 76.0 FEET NORTH AND 32.0 FEET WEST OF COUNTY ROAD 1 AT A TOWNSHIP CROSSROAD, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

NGVD29 ELEVATION IN THE UNITED STATES GEOLOGICAL SURVEY (USGS) BLUE BOOK Q366 EDITION 11/14/1963

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1072.117	.262		983.036	.197	2011	GPS - OPUS	2020	GPSBM
1072.094	.262		983.013	.197	2011	GPS - OPUS	2020	GPSBM
1072.052	.262		983.082	.197	2011	GPS - RTRN	2020	RTRN2020
1072.062			982.990	.019	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1072.062			982.990	.019	2011	GPS - STATIC	2013	HTERR
1072.078	.131		983.115	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.081 12B = -88.970 09 = -88.927 03 = -88.947

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 52 33.82489	96 10 59.20601	545049.392	237643.909	.131	3	GPS - OPUS	2020	GPSBM
47 52 33.82460	96 10 59.20604	545049.390	237643.880	.131	3	GPS - OPUS	2020	GPSBM
47 52 33.82486	96 10 59.20537	545049.435	237643.906	.131	3	GPS - RTRN	2020	RTRN2020
47 52 33.82508	96 10 59.20504	545049.458	237643.929	.013		ADJUSTMENT	2013	GPS2946
47 52 33.82508	96 10 59.20504	545049.458	237643.929	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 52 33.82470	96 10 59.20607	545049.388	237643.890	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1868285.572	845076.448	859572.112	17412796.979	.131	3	GPS - OPUS	2020	GPSBM
1868285.569	845076.418	859572.109	17412796.950	.131	3	GPS - OPUS	2020	GPSBM
1868285.615	845076.443	859572.156	17412796.975	.131	3	GPS - RTRN	2020	RTRN2020
1868285.639	845076.464	859572.179	17412796.996	.013		ADJUSTMENT	2013	GPS2946
1868285.639	845076.464	859572.179	17412796.996	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1868285.567	845076.429	859572.107	17412796.960	.033	C	GPS - STATIC	2012	HTERR



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>		
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6_KEE_RESET-DO8562-3N-16JUN2020.jpg	N	Jun 16, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6_KEE_RESET-DO8562-2-16JUN2020.jpg		Jun 16, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6_KEE_RESET-DO8562-1-16JUN2020.jpg		Jun 16, 2020
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: 6003 M

NGS Name: 6003 M

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DQ7366](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	32	150 N	44 W	474537.59	961844.53	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1968	2019	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (2008) Stamping: 6003 M 1968

2.10 MILES WEST OF MARCOUX, IN THE NORTHEAST HEADWALL OF A TRUNK HIGHWAY 2 BOX CULVERT, 2.1 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 32 IN MARCOUX CORNER, AT TRUNK HIGHWAY 2 MILEPOINT 40.90 (TRUNK HIGHWAY 2 STATION 723+26), 606.0 FEET WEST OF A CROSSROAD, 42.0 FEET NORTH OF WESTBOUND TRUNK HIGHWAY 2.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO FALL RISK AND TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1078.469	.016	2/1					VERTICAL ADJUSTMENT		2019	00000941
1078.584	.016	2/1					VERTICAL CONTROL SURVEY		2012	VCROO

NGVD29				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1077.537	.033	3					VERTICAL CONTROL SURVEY		1969	CS6003

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1078.498	.262			990.093	.197	2011	GPS - RTRN		2019	RTRN2019
1078.456	.262			990.142	.197	1996	GPS - RTRN		2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.441 12B = -88.405 09 = -88.336 03 = -88.313

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				Red Lake County			Determination Method		Project Info	
Geodetic Position				X	Y		Acc	Order		
Latitude	Longitude									Reference
47 45 37.58642	96 18 44.52653			513355.976	195416.296		.131	3	GPS - RTRN	2019 RTRN2019

NAD83(1996)				Red Lake County			Determination Method		Project Info	
Geodetic Position				X	Y		Acc	Order		
Latitude	Longitude									Reference
47 45 37.58660	96 18 44.52710			513355.937	195416.315		.131	3	GPS - RTRN	2008 RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15			Determination Method		Project Info	
MN State Plane - North Zone				X	Y		Acc	Order		
X	Y									Reference
1834841.014	804231.092			826060.198	17371977.943		.131	3	GPS - RTRN	2019 RTRN2019

NAD83(1996)				UTM - Zone 15			Determination Method		Project Info	
MN State Plane - North Zone				X	Y		Acc	Order		
X	Y									Reference
1834840.976	804231.112			826060.160	17371977.963		.131	3	GPS - RTRN	2008 RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6003_M-DO7366-3N-02OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6003_M-DO7366-2-02OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6003_M-DO7366-1-02OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 2, 2019
	Oct 2, 2019
	Oct 2, 2019



Mn/DOT Name: 6003 N

NGS Name: 6003 N

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	34	150 N	44 W	474537.00	961716.00			1968	2008	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1991)

Stamping: 6003 N

0.3 MILE SOUTH-SOUTHEAST OF DELORME, 1.0 MILE WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 32 AT MARCOUX CORNER, 100.0 FEET LEFT OF TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 2 STATION 783+00, EAST OF A RAILROAD.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1088.177	.033	3				VERTICAL CONTROL SURVEY	1969 CS6003

Geoid Separations(ft): GEOID18 = -88.395 12B = -88.359 09 = -88.277 03 = -88.261

* No Horizontal Positions in the Database *



Mn/DOT Name: 6003 Q

NGS Name: 6003 Q

County: RED LAKE, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	4	149 N	44 W	474536.65	961834.85	2	C

NGS ACRN: DQ7367	Get Map
NGS Quad / Sta Num : 47096142/	
USGS Quad: MARCOUX CORNERS	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) **Stamping:** 6003 Q 2010

2.0 MILES NORTHWEST OF MARCOUX, 2.0 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 32 IN MARCOUX, AT TRUNK HIGHWAY 2 MILEPOINT 41.05, 34.9 FEET NORTH OF EASTBOUND TRUNK HIGHWAY 2, 47.5 FEET SOUTH OF WESTBOUND TRUNK HIGHWAY 2, 53.1 FEET EAST OF A CROSSOVER FOR COUNTY ROAD 113, 21.4 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1085.959	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1085.854	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1085.841	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1085.959	.016	2/1				VERTICAL CONTROL SURVEY	2012 VCROO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1085.972	.262		997.537	.197	2011	GPS - OPUS	2022 GPSBM
1085.946	.262		997.508	.197	2011	GPS - RTRN	2021 RTRN2021
1085.959			997.531	.014	2011	HORIZONTAL ADJUSTMENT	2013 GPS2970
1085.959	.131		997.642	.066	1996	GPS - STATIC	2013 HPLK1
1085.959			997.531	.014	2011	GPS - STATIC	2013 HPLK1

Geoid Separations(ft): GEOID18 = -88.435 12B = -88.399 09 = -88.327 03 = -88.304

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Polk County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 45 36.65157	96 18 34.84583	514017.492	195322.042	.023		ADJUSTMENT	2013	GPS2970
47 45 36.65157	96 18 34.84583	514017.492	195322.042	.023	C	GPS - STATIC	2013	HPLK1

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 45 36.65117	96 18 34.84577	514017.496	195322.001	.131	3	GPS - OPUS	2022	GPSBM
47 45 36.65201	96 18 34.84610	514017.473	195322.086	.131	3	GPS - RTRN	2021	RTRN2021

NAD83(1996)		Polk County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 45 36.65111	96 18 34.84689	514017.419	195321.995	.033	C	GPS - STATIC	2013	HPLK1

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1835497.870	804108.951	826717.196	17371854.916	.131	3	GPS - OPUS	2022	GPSBM
1835497.851	804109.037	826717.177	17371855.002	.131	3	GPS - RTRN	2021	RTRN2021
1835497.868	804108.992	826717.193	17371854.956	.023		ADJUSTMENT	2013	GPS2970
1835497.868	804108.992	826717.193	17371854.956	.023	C	GPS - STATIC	2013	HPLK1

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1835497.794	804108.948	826717.119	17371854.913	.033	C	GPS - STATIC	2013	HPLK1

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6003_Q-DO7367-3N-20OCT2021.jpg	N	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6003_Q-DO7367-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6003_Q-DO7367-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 A

NGS Name: 6301 A

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	151 N	44 W	475209.00	961600.00			1948	2019	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1948)

Stamping: 6301 A

1.0 MILE SOUTH-SOUTHEAST OF RED LAKE FALLS, 1.1 MILES SOUTH AND SOUTHEAST ALONG TRUNK HIGHWAY 32 SOUTH (MAIN STREET) FROM THE JUNCTION OF TRUNK HIGHWAY 32 SOUTH (MAIN STREET) AND 2ND STREET SOUTHWEST, 1.7 MILES SOUTH ON TRUNK HIGHWAY 32 FROM TRUNK HIGHWAY 32 BRIDGE NUMBER 5921 OVER THE CLEARWATER RIVER IN RED LAKE FALLS, 58.0 FEET LEFT OF TRUNK HIGHWAY 32, AT TRUNK HIGHWAY 32 STATION 399+20.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1041.028	.033	3				VERTICAL CONTROL SURVEY	1948 CS6301

Geoid Separations(ft): GEOID18 = -89.071 12B = -88.973 09 = -88.930 03 = -88.950

* No Horizontal Positions in the Database *



Mn/DOT Name: 6301 B

NGS Name: 6301 B

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	150 N	44 W	475245.00	961624.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2019	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1948)

Stamping: 6301 B

IN RED LAKE FALLS, AT THE SOUTHWEST CORNER OF THE JUNCTION OF MAIN AVENUE AND FIFTH STREET, 30.0 FEET
LEFT OF TRUNK HIGHWAY 32, AT TRUNK HIGHWAY 32 STATION 445+90.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1040.602	.033	3				VERTICAL CONTROL SURVEY	1948 CS6301

Geoid Separations(ft): GEOID18 = -89.111 12B = -88.996 09 = -88.970 03 = -88.999

* No Horizontal Positions in the Database *



Mn/DOT Name: 6301 C

NGS Name: 6301 C

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	13	151 N	44 W	475330.00	961424.00			1953	2008	DESTROYED	Horz=NO Vert=NO	NO	3986		STEEL SPIKE ADJ TO MON

Monument Type

BRIDGE ABUTMENT

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1973)

Stamping: 6301 C

2.0 MILES NORTHEAST OF RED LAKE FALLS, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 32 BRIDGE NUMBER 3986 OVER THE RED LAKE RIVER, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 1.6 MILES EAST AND EAST-NORTHEAST ALONG TRUNK HIGHWAY 32 NORTH (BRIDGE STREET NORTHEAST), AT TRUNK HIGHWAY 32 MILEPOINT 87.71.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1000.664	.033	3				VERTICAL CONTROL SURVEY	1953 CS6301

Geoid Separations(ft): GEOID18 = -89.140 12B = -89.016 09 = -88.989 03 = -89.025

* No Horizontal Positions in the Database *



Mn/DOT Name: 6301 D

NGS Name: 6301 D

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	26	151 N	44 W	475225.71	961559.10		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1982	2010	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 3 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2008) **Stamping:** 6301 D 1982

0.4 MILE SOUTHEAST OF RED LAKE FALLS, 0.4 MILE SOUTHEAST ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11, AT TRUNK HIGHWAY 32 MILEPOINT 84.95, AT A RIGHT-OF-WAY JOG, 100.0 FEET EAST OF TRUNK HIGHWAY 32, 83.0 FEET SOUTH OF A DRIVEWAY, 0.5 FOOT NORTH OF A WITNESS POST.

Station Notes

FOUND THE MARK BENT OVER FROM BEING HIT. REMOVED THE DISK ON 05-19-2010.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1040.543	.033	3				VERTICAL CONTROL SURVEY	1983	CS6301

Geoid Separations(ft): GEOID18 = -89.088 12B = -88.983 09 = -88.947 03 = -88.973

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_D-3E-19AUG2008.jpg	E	Aug 19, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_D-2-19AUG2008.jpg		Aug 19, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_D-1-19AUG2008.jpg		Aug 19, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 E

NGS Name: 6301 E

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8401](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	34	151 N	44 W	475141.64	961600.86	2	C	1982	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2008) Stamping: 6301 E 1982

1.2 MILES SOUTH OF RED LAKE FALLS, 1.2 MILES SOUTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11, AT TRUNK HIGHWAY 32 MILEPOINT 84.15, 100.0 FEET WEST OF TRUNK HIGHWAY 32, ALONG A FENCE LINE, 1.0 FOOT EAST OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1042.160	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1041.966	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1042.042	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1042.160	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1041.015	.033	3				VERTICAL CONTROL SURVEY	1983	CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1042.048	.262		953.010	.197	2011	GPS - RTRN	2019	RTRN2019
1042.160			953.121	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1042.160			953.121	.011	2011	GPS - STATIC	2013	HTERR
1042.157	.131		953.246	.066	1996	GPS - STATIC	2012	HTERR
1041.881	.262		952.967	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -89.042 12B = -88.947 09 = -88.897 03 = -88.914

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
47 51 41.63812	96 16 00.85619	524491.342	232317.920	.131	3	RTRN2019
47 51 41.63825	96 16 00.85382	524491.503	232317.933	.013		GPS2946
47 51 41.63825	96 16 00.85382	524491.503	232317.933	.013	C	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
47 51 41.63777	96 16 00.85459	524491.451	232317.884	.033	C	HTERR
47 51 41.63799	96 16 00.85377	524491.507	232317.907	.131	3	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1847523.704	840624.350	838795.763	17408370.795	.131	3	GPS - RTRN	2019	RTRN2019
1847523.866	840624.356	838795.925	17408370.801	.013		ADJUSTMENT	2013	GPS2946
1847523.866	840624.356	838795.925	17408370.801	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1847523.812	840624.310	838795.870	17408370.755	.033	C	GPS - STATIC	2012	HTERR
1847523.869	840624.330	838795.927	17408370.775	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_E-DN8401-3W-23OCT2019.jpg	W	Oct 23, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_E-DN8401-2-23OCT2019.jpg		Oct 23, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_E-DN8401-1-23OCT2019.jpg		Oct 23, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 F

NGS Name: 6301 F

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8402](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>					
NE	3	150 N	44 W	475048.00	961559.00	2	3					
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>		<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>				
1982	2023	GOOD	Horz=NO Vert=YES		YES		RECESSED 1 IN.	STEEL SPIKE ADJ TO MON				

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2003) Stamping: 6301 F 1982

2.2 MILES SOUTH OF RED LAKE FALLS, 2.2 MILES SOUTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11, AT TRUNK HIGHWAY 32 MILEPOINT 83.15, 103.0 FEET WEST OF TRUNK HIGHWAY 32, 1.0 FOOT EAST OF THE EAST SIDE OF A QUONSET BUILDING, 4.4 FEET SOUTH-SOUTHEAST OF THE NORTHEAST CORNER OF A QUONSET BUILDING, 0.8 FOOT SOUTHEAST OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1044.709	.016	2/1					VERTICAL ADJUSTMENT	2025	00000988
1044.709	.016	2/1					VERTICAL CONTROL SURVEY	2023	VRDLK
1044.749	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1044.867	.016	2/1					VERTICAL CONTROL SURVEY	2011	VTH32
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1043.554	.033	3					VERTICAL CONTROL SURVEY	1983	CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1044.712	.262			955.740	.197	2011	GPS - RTRN	2019	RTRN2019
1044.693	.262			955.854	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.973 12B = -88.888 09 = -88.832 03 = -88.838

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>Red Lake County</u>			<u>Project Info</u>				
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>										
47 50 48.06514	96 16 01.15272			524478.121	226889.139		.131	3	GPS - RTRN	2019	RTRN2019
<u>NAD83(1996)</u>				<u>Red Lake County</u>			<u>Project Info</u>				
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>										
47 50 48.06632	96 16 01.15339			524478.076	226889.259		.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>			<u>Project Info</u>				
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>										
1847281.176	835201.716			838545.932	17402946.150		.131	3	GPS - RTRN	2019	RTRN2019
<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>			<u>Project Info</u>				
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>										
1847281.136	835201.837			838545.891	17402946.272		.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_F-DN8402-3W-10OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_F-DN8402-2-10OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_F-DN8402-1-10OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 10, 2019
	Oct 10, 2019
	Oct 10, 2019



Mn/DOT Name: 6301 G

NGS Name: 6301 G

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8403](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	10	150 N	44 W	474956.70	961604.50	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1982	2023	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2011) **Stamping:** 6301 G 1982

3.2 MILES SOUTH OF RED LAKE FALLS, 3.2 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11, AT TRUNK HIGHWAY 32 MILEPOINT 82.15, 312.0 FEET WEST OF TRUNK HIGHWAY 32, 13.0 FEET WEST OF A DRIVEWAY NUMBER 10057, 31.0 FEET SOUTH OF COUNTY ROAD 112, 1.0 FOOT WEST OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference	
1052.819	.016	2/1					VERTICAL ADJUSTMENT		2025	00000988	
1052.819	.016	2/1					VERTICAL CONTROL SURVEY		2023	VRDLK	
1052.911	.016	2/1					VERTICAL ADJUSTMENT		2019	00000941	
1053.033	.016	2/1					VERTICAL CONTROL SURVEY		2012	VTERR	
1053.033	.016	2/1					VERTICAL CONTROL SURVEY		2011	VTH32	

NGVD29			Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference	
1051.815	.033	3					VERTICAL CONTROL SURVEY		1983	CS6301	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference	
1052.941	.262		964.043	.197	2011		GPS - RTRN		2019	RTRN2019	

Geoid Separations(ft): GEOID18 = -88.901 12B = -88.822 09 = -88.766 03 = -88.766

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference	
47 49 56.61709	96 16 04.58864	524250.406	221675.424	.131	3	GPS - RTRN		2019	RTRN2019	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order			Year	Reference	
1846833.459	830002.988	838091.170	17397745.772	.131	3	GPS - RTRN		2019	RTRN2019	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_G-DN8403-3S-03OCT2019.jpg	S	Oct 3, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_G-DN8403-2-03OCT2019.jpg		Oct 3, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_G-DN8403-1-03OCT2019.jpg		Oct 3, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 H

NGS Name: 6301 H

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8405](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	150 N	44 W	474902.70	961601.80	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1982	2023	GOOD	Horz=NO Vert=YES	YES		RECESSED 1 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2008)

Stamping: 6301 H 1982

4.1 MILES NORTH OF MARCOUX, 4.1 MILES NORTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 32 MILEPOINT 81.10, 100.0 FEET WEST OF TRUNK HIGHWAY 32, 210.0 FEET SOUTH OF A TOWNSHIP ROAD, 28.4 FEET SOUTHEAST OF A FLAGPOLE AT THE LAKE PLEASANT TOWN HALL, 1.0 FOOT WEST OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1058.462	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1058.462	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1058.574	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1058.695	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1057.429	.033	3				VERTICAL CONTROL SURVEY	1983	CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1058.626	.262		969.814	.197	2011	GPS - RTRN	2019	RTRN2019

Geoid Separations(ft): GEOID18 = -88.812 12B = -88.740 09 = -88.681 03 = -88.678

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 02.59803	96 16 01.93556	524438.474	216201.727	.131	3	GPS - RTRN	2019	RTRN2019

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1846790.115	824526.981	838040.645	17392267.459	.131	3	GPS - RTRN	2019	RTRN2019

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_H-DN8405-3W-03OCT2019.jpg	W	Oct 3, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_H-DN8405-2-02OCT2019.jpg		Oct 2, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_H-DN8405-1-02OCT2019.jpg		Oct 2, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 J

NGS Name: 6301 J

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8407](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	22	150 N	44 W	474811.79	961602.29	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1982	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2008)

Stamping: 6301 J 1982

3.1 MILES NORTH OF MARCOUX, 3.1 MILES NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 32 MILEPOINT 80.15, 100.0 FEET WEST OF TRUNK HIGHWAY 32, 60.0 FEET SOUTH OF COUNTY ROAD 14, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1063.695	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1063.472	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1063.571	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1063.695	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1062.071	.033	3				VERTICAL CONTROL SURVEY	1983	CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1063.715	.262		974.998	.197	2011	GPS - OPUS	2022	GPSBM
1063.587	.262		974.867	.197	2011	GPS - RTRN	2021	RTRN2021
1063.538	.262		974.821	.197	2011	GPS - RTRN	2019	RTRN2019
1063.695			974.959	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1063.695			974.959	.014	2011	GPS - STATIC	2013	HTERR
1063.712	.131		975.110	.066	1996	GPS - STATIC	2012	HTERR
1063.584	.262		974.998	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.720 12B = -88.645 09 = -88.592 03 = -88.586

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 11.78726	96 16 02.29030	524420.882	211052.886	.131	3	GPS - OPUS	2022	GPSBM
47 48 11.78770	96 16 02.28939	524420.944	211052.930	.131	3	GPS - RTRN	2021	RTRN2021
47 48 11.78480	96 16 02.28901	524420.971	211052.636	.131	3	GPS - RTRN	2019	RTRN2019
47 48 11.78708	96 16 02.28949	524420.937	211052.867	.016		ADJUSTMENT	2013	GPS2946
47 48 11.78708	96 16 02.28949	524420.937	211052.867	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 11.78658	96 16 02.29039	524420.876	211052.817	.033	C	GPS - STATIC	2012	HTERR
47 48 11.78731	96 16 02.29084	524420.845	211052.891	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1846555.045	819384.183	837798.797	17387122.748	.131	3	GPS - OPUS	2022	GPSBM
1846555.109	819384.225	837798.860	17387122.790	.131	3	GPS - RTRN	2021	RTRN2021
1846555.123	819383.930	837798.874	17387122.495	.131	3	GPS - RTRN	2019	RTRN2019
1846555.100	819384.162	837798.851	17387122.727	.016		ADJUSTMENT	2013	GPS2946
1846555.100	819384.162	837798.851	17387122.727	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1846555.036	819384.114	837798.788	17387122.679	.033	C	GPS - STATIC	2012	HTERR
1846555.008	819384.189	837798.760	17387122.754	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_J-DN8407-3W-20OCT2021.jpg	W	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_J-DN8407-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_J-DN8407-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 K

NGS Name: 6301 K

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AB9920](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	150 N	44 W	474719.84	961602.23	2	B	1982	2023	GOOD	Horz=YES Vert=YES	YES		PROJECTS 3 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 10 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2002)

Stamping: 6301 K 1982

2.1 MILES NORTH OF MARCOUX, 2.1 MILES NORTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 32 MILEPOINT 79.10, 100.0 FEET WEST OF TRUNK HIGHWAY 32, 29.0 FEET SOUTH OF A TOWNSHIP ROAD, 2.6 FEET NORTH-NORTHEAST OF A RIGHT-OF-WAY POST, 3.8 FEET NORTH-NORTHEAST OF A FENCE CORNER POST, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1087.248	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1087.248	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1087.370	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1087.491	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32
1087.491	.016	2/1				VERTICAL ADJUSTMENT	2010 00000661
1087.481	.016	2/1				VERTICAL CONTROL SURVEY	2004 V630K

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1086.146	.033	3				VERTICAL CONTROL SURVEY	1983 CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1087.321	.262		998.712	.197	2011	GPS - RTRN	2019 RTRN2019
1087.491			998.876	.008	2011	HORIZONTAL ADJUSTMENT	2018 GPS3119
1087.491	.131		998.968	.066	1996	GPS - STATIC	2017 HMNCORS07
1087.491			998.876	.008	2011	GPS - STATIC	2017 HMNPH
1087.370	.262		998.823	.197	2011	GPS - RTRN	2015 RTRN2015
1087.491			998.876	.008	2011	HORIZONTAL ADJUSTMENT	2013 GPS2970
1087.491	.131		998.968	.066	1996	GPS - STATIC	2013 HPLK1
1087.491			998.879	.008	2011	GPS - STATIC	2013 HPLK1
1087.491			998.876	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1087.491			998.876	.009	2011	GPS - STATIC	2013 HTERR
1087.498	.131		999.014	.066	1996	GPS - STATIC	2012 HTERR
			998.876	.008	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			998.991	.066	2007	HORIZONTAL ADJUSTMENT	2010 GPS2195-B
1087.481	.262		999.004	.197	1996	GPS - RTRN	2008 RTRN2008
			998.991	.008	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1087.465	.131		998.968	.066	1996	HORIZONTAL ADJUSTMENT	2006 GPS2195
1087.498	.131		998.968	.066	1996	GPS - STATIC	2005 HCROO
1087.531	.098		998.968	.049	1996	GPS - STATIC	2004 GPS1954
1087.465	.131		998.968	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1748
1087.465	.131		998.968	.066	1996	GPS - STATIC	2002 H5606
1087.465	.131		998.968	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1663
1087.465	.131		998.968	.066	1996	GPS - STATIC	2001 H3986
1087.426	.098		998.968	.049	1996	GPS - STATIC	1997 GPS805-B

Geoid Separations(ft): GEOID18 = -88.605 12B = -88.546 09 = -88.487 03 = -88.478

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 19.83619	96 16 02.23202	524431.630	205788.542	.131	3	GPS - RTRN	2019	RTRN2019
47 47 19.83690	96 16 02.23487	524431.435	205788.614	.007		ADJUSTMENT	2018	GPS3119
47 47 19.83690	96 16 02.23487	524431.435	205788.614	.007	C	GPS - STATIC	2017	HMNPH
47 47 19.83700	96 16 02.23512	524431.418	205788.624	.131	3	GPS - RTRN	2015	RTRN2015
47 47 19.83690	96 16 02.23487	524431.435	205788.614	.007		ADJUSTMENT	2013	GPS2970
47 47 19.83688	96 16 02.23484	524431.437	205788.612	.007	C	GPS - STATIC	2013	HPLK1
47 47 19.83690	96 16 02.23487	524431.435	205788.614	.007		ADJUSTMENT	2013	GPS2946
47 47 19.83681	96 16 02.23475	524431.443	205788.605	.007	C	GPS - STATIC	2013	HTERR
47 47 19.83690	96 16 02.23487	524431.435	205788.614	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 19.83682	96 16 02.23608	524431.352	205788.606	.033	C	ADJUSTMENT	2010	GPS2195-B
47 47 19.83682	96 16 02.23609	524431.352	205788.606	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	GPS - STATIC	2017	HMNCORS07
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	GPS - STATIC	2013	HPLK1
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	GPS - STATIC	2012	HTERR
47 47 19.83717	96 16 02.23485	524431.436	205788.642	.131	3	GPS - RTRN	2008	RTRN2008
47 47 19.83648	96 16 02.23597	524431.360	205788.571	.033	C	ADJUSTMENT	2006	GPS2195
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	GPS - STATIC	2005	HCROO
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.016	B	GPS - STATIC	2004	GPS1954
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	ADJUSTMENT	2002	GPS1748
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	GPS - STATIC	2002	H5606
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	ADJUSTMENT	2002	GPS1663
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.033	C	GPS - STATIC	2001	H3986
47 47 19.83648	96 16 02.23599	524431.359	205788.571	.016	B	GPS - STATIC	1997	GPS805-B

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1846343.407	814124.805	837580.288	17381861.372	.131	3	GPS - RTRN	2019	RTRN2019
1846343.215	814124.885	837580.097	17381861.452	.007		ADJUSTMENT	2018	GPS3119
1846343.215	814124.885	837580.097	17381861.452	.007	C	GPS - STATIC	2017	HMNPH
1846343.198	814124.896	837580.080	17381861.463	.131	3	GPS - RTRN	2015	RTRN2015
1846343.215	814124.885	837580.097	17381861.452	.007		ADJUSTMENT	2013	GPS2970
1846343.217	814124.883	837580.099	17381861.450	.007	C	GPS - STATIC	2013	HPLK1
1846343.215	814124.885	837580.097	17381861.452	.007		ADJUSTMENT	2013	GPS2946
1846343.223	814124.876	837580.105	17381861.443	.007	C	GPS - STATIC	2013	HTERR
1846343.215	814124.885	837580.097	17381861.452	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1846343.132	814124.881	837580.014	17381861.447	.033	C	ADJUSTMENT	2010	GPS2195-B
1846343.131	814124.881	837580.013	17381861.447	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1846343.137	814124.846	837580.019	17381861.413	.033	C	GPS - STATIC	2017	HMNCORS07
1846343.137	814124.846	837580.019	17381861.413	.033	C	GPS - STATIC	2013	HPLK1
1846343.137	814124.846	837580.019	17381861.413	.033	C	GPS - STATIC	2012	HTERR
1846343.218	814124.912	837580.099	17381861.479	.131	3	GPS - RTRN	2008	RTRN2008
1846343.138	814124.846	837580.020	17381861.412	.033	C	ADJUSTMENT	2006	GPS2195
1846343.137	814124.846	837580.019	17381861.413	.033	C	GPS - STATIC	2005	HCROO
1846343.137	814124.846	837580.019	17381861.413	.016	B	GPS - STATIC	2004	GPS1954
1846343.137	814124.846	837580.019	17381861.413	.033	C	ADJUSTMENT	2002	GPS1748
1846343.137	814124.846	837580.019	17381861.413	.033	C	GPS - STATIC	2002	H5606
1846343.137	814124.846	837580.019	17381861.413	.033	C	ADJUSTMENT	2002	GPS1663
1846343.137	814124.846	837580.019	17381861.413	.033	C	GPS - STATIC	2001	H3986
1846343.137	814124.846	837580.019	17381861.413	.016	B	GPS - STATIC	1997	GPS805-B

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_K-AB9920-3SW-01OCT2019.jpg	SW	Oct 1, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_K-AB9920-2-01OCT2019.jpg		Oct 1, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_K-AB9920-1-01OCT2019.jpg		Oct 1, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 L

NGS Name: 6301 L

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DM3695](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	27	150 N	44 W	474628.10	961602.22	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1982	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2004) **Stamping:** 6301 L 1982

1.1 MILES NORTH OF MARCOUX, 1.1 MILES NORTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 32 MILEPOINT 78.15, 100.0 FEET WEST OF TRUNK HIGHWAY 32, 31.0 FEET NORTH OF A TOWNSHIP ROAD, 2.0 FEET SOUTH OF A POWER POLE, 1.0 FOOT EAST OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1088.846	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1088.846	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1088.971	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1089.092	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32
1089.092	.016	2/1				VERTICAL ADJUSTMENT	2010	00000661
1089.086	.016	2/1				VERTICAL CONTROL SURVEY	2004	V630K

NGVD29			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1087.652	.033	3				VERTICAL CONTROL SURVEY	1983	CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1088.991	.262		1000.507	.197	2011	GPS - RTRN	2019	RTRN2019
1089.092			1000.631	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1089.092	.131		1000.743	.066	1996	GPS - STATIC	2013	HPLK1
1089.092			1000.631	.010	2011	GPS - STATIC	2013	HPLK1
1088.984	.262		1000.638	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.484 12B = -88.438 09 = -88.359 03 = -88.353

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 46 28.10277	96 16 02.21714	524439.386	200546.263	.131	3	GPS - RTRN	2019	RTRN2019
47 46 28.10393	96 16 02.21366	524439.624	200546.380	.013		ADJUSTMENT	2013	GPS2970
47 46 28.10393	96 16 02.21366	524439.624	200546.380	.013	C	GPS - STATIC	2013	HPLK1

NAD83(1996)		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 46 28.10342	96 16 02.21462	524439.558	200546.329	.033	C	GPS - STATIC	2013	HPLK1
47 46 28.10483	96 16 02.21426	524439.583	200546.472	.131	3	GPS - RTRN	2008	RTRN2008



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1846129.713	808887.595	837359.803	17376622.172	.131	3	GPS - RTRN	2019	RTRN2019
1846129.955	808887.703	837360.045	17376622.279	.013		ADJUSTMENT	2013	GPS2970
1846129.955	808887.703	837360.045	17376622.279	.013	C	GPS - STATIC	2013	HPLK1

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1846129.887	808887.654	837359.978	17376622.231	.033	C	GPS - STATIC	2013	HPLK1
1846129.918	808887.796	837360.008	17376622.372	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_L-DM3695-3W-02OCT2019.jpg	W	Oct 2, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_L-DM3695-2-02OCT2019.jpg		Oct 2, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_L-DM3695-1-02OCT2019.jpg		Oct 2, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 M

NGS Name: 6301 M

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DM3694](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	34	150 N	44 W	474536.10	961605.35	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1982	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2008) Stamping: 6301 M 1982

7.0 MILES NORTHWEST OF MENTOR, 0.1 MILE NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2 IN MARCOUX, AT TRUNK HIGHWAY 32 MILEPOINT 77.15, 315.0 FEET WEST OF TRUNK HIGHWAY 32, 53.0 FEET NORTH OF OLD TRUNK HIGHWAY 2 (280TH STREET SOUTHEAST), 167.0 FEET SOUTH OF STATION MARCOUX, 1.0 FOOT EAST OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1093.098	.016	2/1				VERTICAL ADJUSTMENT			2025	00000988		
1093.098	.016	2/1				VERTICAL CONTROL SURVEY			2023	VRDLK		
1093.098	.016	2/1				VERTICAL ADJUSTMENT			2019	00000941		
1093.216	.016	2/1				VERTICAL CONTROL SURVEY			2012	VCROO		
1093.216	.016	2/1				VERTICAL CONTROL SURVEY			2011	VTH32		
1093.216	.016	2/1				VERTICAL ADJUSTMENT			2010	00000661		
1093.206	.016	2/1				VERTICAL CONTROL SURVEY			2004	V630K		

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1091.956	.033	3				VERTICAL CONTROL SURVEY		1983	CS6301

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1093.105	.262		1004.742	.197	2011	GPS - RTRN		2019	RTRN2019
1093.302	.262		1005.073	.197	1996	GPS - RTRN		2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.359 12B = -88.327 09 = -88.228 03 = -88.222

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		Red Lake County		Acc		Order		Determination Method		Project Info	
		Latitude	Longitude	X	Y							Year	Reference
47	45	36.10184	96 16 05.34827	524232.222	195276.612	.131	3	GPS - RTRN				2019	RTRN2019

NAD83(1996)

NAD83(1996)		Geodetic Position		Red Lake County		Acc		Order		Determination Method		Project Info	
		Latitude	Longitude	X	Y							Year	Reference
47	45	36.10445	96 16 05.34732	524232.287	195276.877	.131	3	GPS - RTRN				2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Acc		Order		Determination Method		Project Info	
		X	Y	X	Y							Year	Reference
1845	700.162	803632.121	836923.395	17371364.970	.131	3	GPS - RTRN					2019	RTRN2019

NAD83(1996)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15		Acc		Order		Determination Method		Project Info	
		X	Y	X	Y							Year	Reference
1845	700.238	803632.382	836923.471	17371365.232	.131	3	GPS - RTRN					2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_M-DM3694-3W-01OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_M-DM3694-2-01OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_M-DM3694-1-01OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 1, 2019
	Oct 1, 2019
	Oct 1, 2019



Mn/DOT Name: 6301 N

NGS Name: 6301 N

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8396](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	22	151 N	44 W	475313.10	961610.70	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1984	2023	GOOD	Horz=NO Vert=YES	YES	5921	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE WALKWAY	VERTICAL CONTROL DISK	MNDT

Description: (2010)

Stamping: 6301 N 1984

IN RED LAKE FALLS, IN A BRIDGE WALKWAY IN THE SOUTHWEST OF CORNER OF TRUNK HIGHWAY 32 BRIDGE NUMBER 5921 OVER THE CLEARWATER RIVER, 0.85 MILE NORTHEAST ALONG TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN THE SOUTH EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 86.8, 23.4 FEET SOUTH OF TRUNK HIGHWAY 32.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
992.747	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988	
992.747	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK	
992.810	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941	
992.928	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32	

Geoid Separations(ft): GEOID18 = -89.137 12B = -89.012 09 = -88.993 03 = -89.029

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_N-DN8396-3S-09OCT2019.jpg	S	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_N-DN8396-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_N-DN8396-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 P

NGS Name: 6301 P

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8397](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	22	151 N	44 W	475312.60	961606.80	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1984	2023	GOOD	Horz=NO Vert=YES	YES	5921	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE WALKWAY	VERTICAL CONTROL DISK	MNDT

Description: (2010) Stamping: 6301 P 1984

IN RED LAKE FALLS, IN A BRIDGE WALKWAY IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 32 BRIDGE NUMBER 5921 OVER THE CLEARWATER RIVER, 0.9 MILE NORTH AND EAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN THE SOUTH EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 86.8, 23.4 FEET SOUTH OF TRUNK HIGHWAY 32.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1004.906	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988	
1004.906	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK	
1004.968	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941	
1005.087	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32	

Geoid Separations(ft): GEOID18 = -89.137 12B = -89.012 09 = -88.989 03 = -89.025

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_P-DN8397-3S-09OCT2019.jpg	S	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_P-DN8397-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_P-DN8397-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 Q

NGS Name: 6301 Q

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8395](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	13	151 N	44 W	475330.10	961427.40	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2003	2019	GOOD	Horz=NO Vert=NO	YES	83002	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE RAILING	SURVEY DISK	MNDT

Description: (2003)

Stamping: 6301 Q 2003

2.0 MILES NORTHEAST OF RED LAKE FALLS, IN A RAILING IN THE SOUTHWEST CORNER OF TRUNK HIGHWAY 32 BRIDGE NUMBER 83002 OVER THE RED LAKE RIVER, 2.3 MILES NORTH AND EAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 AT THE SOUTH EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY MILEPOINT 87.65, 22.1 FEET SOUTH OF TRUNK HIGHWAY 32, 17.4 FEET EAST OF THE WEST END OF A RAIL.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
999.401	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
999.519	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Geoid Separations(ft): GEOID18 = -89.140 12B = -89.016 09 = -88.993 03 = -89.025

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_Q-DN8395-3S-28JUL2010.jpg	S	Jul 28, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_Q-DN8395-2-28JUL2010.jpg		Jul 28, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_Q-DN8395-1-28JUL2010.jpg		Jul 28, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 R

NGS Name: 6301 R

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8394](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	13	151 N	44 W	475331.00	961422.80	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2003	2019	GOOD	Horz=NO Vert=NO	YES	83002	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE RAILING	SURVEY DISK	MNDT

Description: (2003)

Stamping: 6301 R 2003

2.0 MILES NORTHEAST OF RED LAKE FALLS, IN A RAILING IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 32 BRIDGE NUMBER 83002 OVER THE RED LAKE RIVER, 2.35 MILES NORTH AND EAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 AT THE SOUTH EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 87.7, 22.1 FEET SOUTH OF TRUNK HIGHWAY 32, 17.4 FEET WEST OF THE EAST END OF A RAILING.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1004.736	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1004.854	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Geoid Separations(ft): GEOID18 = -89.140 12B = -89.016 09 = -88.993 03 = -89.025

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_R-DN8394-2-19MAY2010.jpg		May 19, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_R-DN8394-1-19MAY2010.jpg		May 19, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 S

NGS Name: 6301 S

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	151 N	43 W	475416.80	961324.10	2	C

NGS ACRN: [DN8393](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010)

Stamping: 6301 S 2010

2.7 MILES NORTHEAST OF RED LAKE FALLS, 3.55 MILES NORTH AND EAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 88.9, 129.7 FEET EAST OF TRUNK HIGHWAY 32, 15.7 FEET SOUTH OF 180TH STREET SOUTHEAST, 41.3 FEET NORTHEAST OF A POWER CABINET, 18.7 FEET EAST OF A FIELD ENTRANCE, 47.9 FEET NORTHEAST OF A POWER POLE, 2.8 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1060.864	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1060.690	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1060.739	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1060.864	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1060.841	.262		971.678	.197	2011	GPS - OPUS	2022	GPSBM
1060.703	.262		971.540	.197	2011	GPS - RTRN	2021	RTRN2021
1060.680	.262		971.520	.197	2011	GPS - RTRN	2019	RTRN2019
1060.864			971.707	.019	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1060.864			971.707	.019	2011	GPS - STATIC	2013	HTERR
1060.857	.131		971.812	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.160 12B = -89.029 09 = -89.012 03 = -89.052

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 54 16.80340	96 13 24.10298	535151.758	248058.288	.131	3	GPS - OPUS	2022	GPSBM
47 54 16.80388	96 13 24.10189	535151.833	248058.337	.131	3	GPS - RTRN	2021	RTRN2021
47 54 16.80380	96 13 24.10656	535151.514	248058.328	.131	3	GPS - RTRN	2019	RTRN2019
47 54 16.80401	96 13 24.10238	535151.799	248058.350	.016		ADJUSTMENT	2013	GPS2946
47 54 16.80401	96 13 24.10238	535151.799	248058.350	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 54 16.80371	96 13 24.10338	535151.731	248058.319	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1858838.049	855898.201	850135.413	17423635.818	.131	3	GPS - OPUS	2022	GPSBM
1858838.125	855898.246	850135.490	17423635.863	.131	3	GPS - RTRN	2021	RTRN2021
1858837.807	855898.251	850135.171	17423635.869	.131	3	GPS - RTRN	2019	RTRN2019
1858838.092	855898.261	850135.457	17423635.878	.016		ADJUSTMENT	2013	GPS2946
1858838.092	855898.261	850135.457	17423635.878	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1858838.023	855898.233	850135.387	17423635.850	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_S-DN8393-3S-20OCT2021.jpg	S	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_S-DN8393-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_S-DN8393-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 T

NGS Name: 6301 T

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8391](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	30	152 N	43 W	475709.26	961258.64	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) Stamping: 6301 T 2010

4.2 MILES SOUTH OF ST. HILAIRE, 3.7 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 55 IN ST. HILAIRE, AT TRUNK HIGHWAY 32 MILEPOINT 92.4, 38.3 FEET WEST OF TRUNK HIGHWAY 32, 18.1 FEET SOUTH OF A FIELD ENTRANCE, 2.9 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1082.721	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1082.583	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1082.583	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1082.721	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1082.731	.262		993.545	.197	2011	GPS - OPUS	2020	GPSBM
1082.521	.262		993.466	.197	2011	GPS - RTRN	2020	RTRN2020
1082.554	.262		993.367	.197	2011	GPS - RTRN	2019	RTRN2019
1082.721			993.561	.012	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1082.721			993.561	.012	2011	GPS - STATIC	2013	HTERR
1082.708	.131		993.627	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.186 12B = -89.055 09 = -89.042 03 = -89.094

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 57 09.26363	96 12 58.64234	536852.570	265537.866	.131	3	GPS - OPUS	2020	GPSBM
47 57 09.26386	96 12 58.64182	536852.605	265537.890	.131	3	GPS - RTRN	2020	RTRN2020
47 57 09.26502	96 12 58.64527	536852.371	265538.007	.131	3	GPS - RTRN	2019	RTRN2019
47 57 09.26430	96 12 58.64130	536852.641	265537.934	.013		ADJUSTMENT	2013	GPS2946
47 57 09.26430	96 12 58.64130	536852.641	265537.934	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 57 09.26423	96 12 58.64224	536852.577	265537.927	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1861275.479	873287.943	852597.751	17441029.263	.131	3	GPS - OPUS	2020	GPSBM
1861275.515	873287.965	852597.788	17441029.285	.131	3	GPS - RTRN	2020	RTRN2020
1861275.286	873288.092	852597.558	17441029.412	.131	3	GPS - RTRN	2019	RTRN2019
1861275.553	873288.008	852597.825	17441029.328	.013		ADJUSTMENT	2013	GPS2946
1861275.553	873288.008	852597.825	17441029.328	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1861275.488	873288.003	852597.761	17441029.324	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_T-DN8391-3W-09OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_T-DN8391-2-09OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_T-DN8391-1-09OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 9, 2019
	Oct 9, 2019
	Oct 9, 2019



Mn/DOT Name: 6301 U

NGS Name: 6301 U

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR9547](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	10	150 N	44 W	474918.04	961601.06	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2019	2019	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: 6301 U 2019

4.5 MILES SOUTH OF RED LAKE FALLS, 4.0 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 81.4, 40.8 FEET WEST OF TRUNK HIGHWAY 32, 26.1 FEET SOUTH OF DRIVEWAY NUMBER 23736, 5.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1061.225	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988	
1061.225	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1061.409	.262		972.570	.197	2011	GPS - RTRN	2019	RTRN2019	

Geoid Separations(ft): GEOID18 = -88.838 12B = -88.763 09 = -88.707 03 = -88.704

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 49 18.03845	96 16 01.06037	524496.189	217766.431	.131	3	GPS - RTRN	2019	RTRN2019

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
1846913.867	826087.636	838166.486	17393828.627	.131	3	GPS - RTRN	2019	RTRN2019

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_U-DR9547-3W-28OCT2019.jpg	W	Oct 28, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_U-DR9547-2-28OCT2019.jpg		Oct 28, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_U-DR9547-1-28OCT2019.jpg		Oct 28, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 V

NGS Name: 6301 V

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR9548](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	34	151 N	44 W	475051.01	961600.56	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2019	2019	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) **Stamping:** 6301 V 2019

2.5 MILES SOUTH OF RED LAKE FALLS, 2.3 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 83.15, 200.0 FEET NORTH OF COUNTY ROAD 114, 64.4 FEET WEST OF TRUNK HIGHWAY 32, 38.9 FEET SOUTH OF A DRIVEWAY NUMBER 21975 AND 21983, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1042.554	.016	2/1					VERTICAL ADJUSTMENT	2025	00000988
1042.554	.016	2/1					VERTICAL CONTROL SURVEY	2023	VRDLK

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1042.714	.262			953.738	.197	2011	GPS - RTRN	2019	RTRN2019

Geoid Separations(ft): GEOID18 = -88.976 12B = -88.894 09 = -88.838 03 = -88.845

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 50 51.00665	96 16 00.56344	524517.933	227187.265	.131	3	GPS - RTRN	2019	RTRN2019	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference	
1847333.541	835497.853	838598.710	17403242.346	.131	3	GPS - RTRN	2019	RTRN2019	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_V-DR9548-3W-28OCT2019.jpg	W	Oct 28, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_V-DR9548-2-28OCT2019.jpg		Oct 28, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_V-DR9548-1-28OCT2019.jpg		Oct 28, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6301 W

NGS Name: 6301 W

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR9549](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	22	151 N	44 W	475315.73	961619.79	2	3	2019	2019	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: 6301 W 2019

IN RED LAKE FALLS, AT THE JUNCTION OF TRUNK HIGHWAY 32 AND BRIDGE STREET IN RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 86.15, 62.0 FEET NORTH -NORTHWEST OF TRUNK HIGHWAY 32, 48.8 FEET EAST-NORTHEAST OF BRIDGE STREET NORTHWEST, 1.5 FEET SOUTH-SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
974.890	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
974.890	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
974.942	.262		885.805	.197	2011	GPS - RTRN	2019	RTRN2019

Geoid Separations(ft): GEOID18 = -89.137 12B = -89.016 09 = -88.996 03 = -89.032

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 53 15.73170	96 16 19.79396	523188.248	241851.195	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>X</u>	<u>Y</u>					
1846624.654	850202.856	837909.173	17417954.632	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_W-DR9549-3N-28OCT2019.jpg	N	Oct 28, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_W-DR9549-2-28OCT2019.jpg		Oct 28, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6301_W-DR9549-1-28OCT2019.jpg		Oct 28, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 A

NGS Name: 6302 A

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	150 N	42 W	474812.00	960000.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1947	2012	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1947)

Stamping: 6302 A

1.0 MILE SOUTH OF BROOKS, AT THE NORTHWEST CORNER OF THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 18, 47.0 FEET RIGHT OF TRUNK HIGHWAY 59, AT TRUNK HIGHWAY 59 STATION 822+37.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1130.526	.033	3				VERTICAL CONTROL SURVEY	1947 CS6302

Geoid Separations(ft): GEOID18 = -88.901 12B = -88.829 09 = -88.724 03 = -88.727

* No Horizontal Positions in the Database *



Mn/DOT Name: 6302 B

NGS Name: 6302 B

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0081](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	23	150 N	42 W	474722.73	960002.69	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1947	2012	GOOD	Horz=NO Vert=YES	YES		PROJECTS 10 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	MNDT

Description: (2002)

Stamping: 6302 B 1947

1.7 MILES SOUTH OF BROOKS, 2.0 MILES SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 332.65, 89.1 FEET WEST OF TRUNK HIGHWAY 59, 42.6 FEET NORTHEAST OF THE NORTH END OF A METAL CULVERT, 58.0 FEET NORTH OF COUNTY ROAD 16, 1.4 FEET SOUTH OF A TELEPHONE POLE, 33.5 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 0.4 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1137.163	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1137.294	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1136.691	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1135.506	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1135.506	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1137.107	.262		1048.459	.197	2007	GPS - RTRN	2012	RTRN2012
1137.015	.262		1048.338	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.845 12B = -88.763 09 = -88.651 03 = -88.678

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 22.73422	96 00 02.68746	589956.299	206279.441	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 22.73257	96 00 02.68739	589956.304	206279.274	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911821.353	811847.311	903079.772	17379499.017	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911821.352	811847.144	903079.771	17379498.850	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_B-SL0081-3N-20AUG2008.jpg	N	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_B-SL0081-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_B-SL0081-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 C

NGS Name: 6302 C

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0085](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	150 N	42 W	474630.00	960001.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1947	2004	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 30 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	MNDT

Description: (2002) Stamping: 6302 C 1947

2.7 MILES SOUTH OF BROOKS, 3.0 MILES SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 331.60, 88.4 FEET WEST OF TRUNK HIGHWAY 59, 9.5 FEET SOUTH OF A TELEPHONE POLE, 95.1 FEET NORTH OF THE NORTH END OF A CONCRETE CULVERT, 34.0 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 0.5 FOOT EAST OF A WITNESS POST.

Station Notes

THE DISK WAS REMOVED AND TURNED IN TO THE OFFICE. (6/15/04).

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1144.479	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1143.302	.016	2					VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -88.776 12B = -88.704 09 = -88.582 03 = -88.612

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_C-SL0085-3E-29JUL2003.jpg	E	Jul 29, 2003
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_C-SL0085-2-29JUL2003.jpg		Jul 29, 2003
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_C-SL0085-1-29JUL2003.jpg		Jul 29, 2003

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 D

NGS Name: 6302 D

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	150 N	42 W	474558.35	960004.13	2	C

NGS ACRN: [SL0086](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2013	GOOD	Horz=NO Vert=NO	YES		PROJECTS 3 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 8 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2012)

Stamping: 6302 D 1977

3.3 MILES SOUTH OF BROOKS, 3.55 MILES SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 331.05, 86.0 FEET WEST OF TRUNK HIGHWAY 59, 35.8 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 35.0 FEET WEST-NORTHWEST OF THE NORTH END OF A METAL CULVERT, 19.0 FEET NORTH OF AN ENTRANCE, 0.9 FOOT EAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1151.021	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1151.149	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1151.100	.016	2/1				VERTICAL ADJUSTMENT	2006	00000425-9
1151.100	.016	2/1				VERTICAL CONTROL SURVEY	2005	VLAMB
1150.916	.016	2				VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1149.742	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1149.742	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1151.100			1062.367	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1151.100	.131		1062.541	.066	1996	GPS - STATIC	2013	HPLK1
1151.100			1062.380	.010	2011	GPS - STATIC	2013	HPLK1
1151.100			1062.367	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1151.100			1062.380	.011	2011	GPS - STATIC	2013	HTERR
1151.113	.131		1062.541	.066	1996	GPS - STATIC	2012	HTERR
			1062.367	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1151.021	.262		1062.478	.197	2007	GPS - RTRN	2012	RTRN2012
1151.034	.262		1062.475	.197	1996	GPS - RTRN	2008	RTRN2008
			1062.488	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1151.048	.131		1062.488	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1894
1151.048	.131		1062.488	.066	1996	GPS - STATIC	2003	HBAGL

Geoid Separations(ft): GEOID18 = -88.727 12B = -88.668 09 = -88.543 03 = -88.560

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 58.34638	96 00 04.13007	589898.227	197727.831	.013		ADJUSTMENT	2013	GPS2970
47 45 58.34636	96 00 04.13018	589898.219	197727.829	.013	C	GPS - STATIC	2013	HPLK1
47 45 58.34638	96 00 04.13007	589898.227	197727.831	.010		ADJUSTMENT	2013	GPS2946
47 45 58.34647	96 00 04.13029	589898.212	197727.839	.010	C	GPS - STATIC	2013	HTERR
47 45 58.34638	96 00 04.13007	589898.227	197727.831	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 58.34654	96 00 04.13187	589898.104	197727.846	.131	3	GPS - RTRN	2012	RTRN2012
47 45 58.34632	96 00 04.13102	589898.162	197727.824	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 58.34601	96 00 04.13119	589898.150	197727.793	.033	C	GPS - STATIC	2013	HPLK1
47 45 58.34601	96 00 04.13119	589898.150	197727.793	.033	C	GPS - STATIC	2012	HTERR
47 45 58.34663	96 00 04.13066	589898.186	197727.856	.131	3	GPS - RTRN	2008	RTRN2008
47 45 58.34601	96 00 04.13119	589898.150	197727.793	.033	C	ADJUSTMENT	2003	GPS1894
47 45 58.34601	96 00 04.13119	589898.150	197727.793	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911402.103	803306.958	902649.500	17370956.492	.013		ADJUSTMENT	2013	GPS2970
1911402.095	803306.956	902649.493	17370956.490	.013	C	GPS - STATIC	2013	HPLK1
1911402.103	803306.958	902649.500	17370956.492	.010		ADJUSTMENT	2013	GPS2946
1911402.088	803306.968	902649.486	17370956.501	.010	C	GPS - STATIC	2013	HTERR
1911402.103	803306.958	902649.500	17370956.492	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911401.980	803306.979	902649.378	17370956.513	.131	3	GPS - RTRN	2012	RTRN2012
1911402.038	803306.955	902649.436	17370956.488	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911402.025	803306.924	902649.423	17370956.457	.033	C	GPS - STATIC	2013	HPLK1
1911402.025	803306.924	902649.423	17370956.457	.033	C	GPS - STATIC	2012	HTERR
1911402.063	803306.985	902649.461	17370956.519	.131	3	GPS - RTRN	2008	RTRN2008
1911402.025	803306.924	902649.423	17370956.457	.033	C	ADJUSTMENT	2003	GPS1894
1911402.025	803306.924	902649.422	17370956.457	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_D-SL0086-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_D-SL0086-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_D-SL0086-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 E

NGS Name: 6302 E

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DQ8771](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	26	150 N	42 W	474629.96	960003.13	2	C	2010	2018	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) Stamping: 6302 E 2010

3.0 SOUTH OF BROOKS, 3.05 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 331.65, 55.4 FEET WEST OF TRUNK HIGHWAY 59, 16.5 FEET NORTH OF COUNTY ROAD 7 EXTENDED, 66.4 FEET EAST OF THE EAST RAIL OF THE TRACKS, 2.7 FEET SOUTH OF A WITNESS POST.

Station Notes

THE ROD HAS BEEN HIT AND BENT OVER.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1147.721	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1147.852	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1147.852			1059.020	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1147.852	.131		1059.181	.066	1996	GPS - STATIC	2013	HPLK1
1147.852			1059.020	.010	2011	GPS - STATIC	2013	HPLK1
1147.681	.262		1059.102	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -88.773 12B = -88.701 09 = -88.579 03 = -88.609

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 46 29.95724	96 00 03.13145	589951.291	200931.325	.013		ADJUSTMENT	2013	GPS2970
47 46 29.95724	96 00 03.13145	589951.291	200931.325	.013	C	GPS - STATIC	2013	HPLK1

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 46 29.95746	96 00 03.13340	589951.157	200931.346	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 46 29.95686	96 00 03.13246	589951.222	200931.286	.033	C	GPS - STATIC	2013	HPLK1

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911590.434	806504.913	902841.954	17374155.221	.013		ADJUSTMENT	2013	GPS2970
1911590.434	806504.913	902841.954	17374155.221	.013	C	GPS - STATIC	2013	HPLK1

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911590.302	806504.940	902841.822	17374155.248	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911590.364	806504.877	902841.884	17374155.185	.033	C	GPS - STATIC	2013	HPLK1

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_E-DO8771-3W-21JUL2010.jpg	W	Jul 21, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_E-DO8771-2-21JUL2010.jpg		Jul 21, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_E-DO8771-1-21JUL2010.jpg		Jul 21, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 E RESET

NGS Name: 6302 E RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8849](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	26	150 N	42 W	474629.96	960003.13		C	2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: Stamping: 6302 E RESET 2018

3.0 MILES SOUTH OF BROOKS, 3.05 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 331.65, 55.4 FEET WEST OF TRUNK HIGHWAY 59, 16.5 FEET NORTH OF COUNTY ROAD 7 EXTENDED, 66.4 FEET EAST OF THE EAST RAIL OF THE TRACKS, 13.1 EAST-SOUTHEAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1147.396				1058.754	.028	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1147.399	.131			1058.899	.066	1996	GPS - STATIC	2023	HERSK
1147.396				1058.754	.028	2011	GPS - STATIC	2023	HERSK
1147.452	.262			1058.754	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -88.773 12B = -88.701 09 = -88.579 03 = -88.609

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>								
Geodetic Position		Red Lake County		Project Info				
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 46 29.95672	96 00 03.13178	589951.268	200931.272	.013		ADJUSTMENT	2023	GPS3597
47 46 29.95672	96 00 03.13178	589951.268	200931.272	.013	C	GPS - STATIC	2023	HERSK
47 46 29.95675	96 00 03.13210	589951.246	200931.275	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>				<u>Red Lake County</u>			<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
47 46 29.95647	96 00 03.13251	589951.218	200931.246	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>											
MN State Plane - North Zone		UTM - Zone 15				Project Info					
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>			
1911590.410	806504.861	902841.930	17374155.169	.013		ADJUSTMENT	2023	GPS3597			
1911590.410	806504.861	902841.930	17374155.169	.013	C	GPS - STATIC	2023	HERSK			
1911590.388	806504.865	902841.908	17374155.173	.131	3	GPS - RTRN	2018	RTRN2018			

<u>NAD83(1996)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1911590.359	806504.837	902841.879	17374155.145	.033	C	GPS - STATIC	2023	HERSK	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_E_RESET-DR8849-3W-09OCT2018.jpg	W	Oct 9, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_E_RESET-DR8849-2-09OCT2018.jpg		Oct 9, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_E_RESET-DR8849-1-09OCT2018.jpg		Oct 9, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 F

NGS Name: 6302 F

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8850](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	14	150 N	42 W	474859.15	955955.18		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018) Stamping: 6302 F 2018

IN BROOKS, 0.15 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 334.5, 70.4 FEET EAST OF TRUNK HIGHWAY 59, 115.2 FEET SOUTH OF A POWER POLE, 1.5 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1127.143				1038.318	.026	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1127.127	.131			1038.462	.066	1996	GPS - STATIC	2023	HERSK
1127.143				1038.318	.026	2011	GPS - STATIC	2023	HERSK
1127.176	.262			1038.275	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -88.957 12B = -88.904 09 = -88.789 03 = -88.770

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 48 59.15150	95 59 55.17521	590422.771	216052.020	.013		ADJUSTMENT	2023	GPS3597
47 48 59.15150	95 59 55.17521	590422.771	216052.020	.013	C	GPS - STATIC	2023	HERSK
47 48 59.15112	95 59 55.17601	590422.716	216051.981	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 48 59.15126	95 59 55.17593	590422.722	216051.995	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1912700.159	821590.124	903971.428	17389243.776	.013		ADJUSTMENT	2023	GPS3597
1912700.159	821590.124	903971.428	17389243.776	.013	C	GPS - STATIC	2023	HERSK
1912700.103	821590.088	903971.372	17389243.740	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1912700.109	821590.102	903971.377	17389243.754	.033	C	GPS - STATIC	2023	HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_F-DR8850-3E-23OCT2018.jpg	E	Oct 23, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_F-DR8850-2-23OCT2018.jpg		Oct 23, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_F-DR8850-1-23OCT2018.jpg		Oct 23, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6302 G

NGS Name: 6302 G

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8851](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	26	150 N	42 W	474716.86	960001.97		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018) **Stamping:** 6302 G 2018

1.8 MILES SOUTH OF BROOKS, 2.2 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 332.55, 33.0 FEET WEST OF TRUNK HIGHWAY 59, 14.8 FEET NORTH OF A DITCH BLOCK, 1.5 FEET EAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1138.800				1050.096	.026	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1138.810	.131			1050.237	.066	1996	GPS - STATIC	2023	HERSK
1138.800				1050.096	.026	2011	GPS - STATIC	2023	HERSK
1138.803	.262			1050.047	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -88.838 12B = -88.756 09 = -88.642 03 = -88.674

Lat/Lon and County Coordinates (Feet)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 47 16.86285	96 00 01.97143	590008.013	205684.717	.013		ADJUSTMENT	2023	GPS3597
47 47 16.86285	96 00 01.97143	590008.013	205684.717	.013	C	GPS - STATIC	2023	HERSK
47 47 16.86314	96 00 01.97145	590008.011	205684.746	.131	3	GPS - RTRN	2018	RTRN2018

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 47 16.86261	96 00 01.97215	590007.964	205684.692	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1911847.892	811251.015	903105.555	17378902.498	.013		ADJUSTMENT	2023	GPS3597
1911847.892	811251.015	903105.555	17378902.498	.013	C	GPS - STATIC	2023	HERSK
1911847.891	811251.044	903105.554	17378902.527	.131	3	GPS - RTRN	2018	RTRN2018

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1911847.841	811250.993	903105.505	17378902.475	.033	C	GPS - STATIC	2023	HERSK

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_G-DR8851-3W-22OCT2018.jpg	W	Oct 22, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_G-DR8851-2-22OCT2018.jpg		Oct 22, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6302_G-DR8851-1-22OCT2018.jpg		Oct 22, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 A

NGS Name: 6303 A

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	11	150 N	42 W	474906.00	955957.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	MNHD

Description: (1977)

Stamping: 6303 A 1977

0.3 MILE NORTHEAST OF BROOKS, AT THE JUNCTION OF TRUNK HIGHWAYS 59 AND 92 NORTH OF BROOKS, AT TRUNK HIGHWAY 59 MILEPOST 334.65, AT TRUNK HIGHWAY 92 MILEPOST 13.0, NORTH OF TRUNK HIGHWAY 92, EAST OF TRUNK HIGHWAY 59.

Station Notes

SET VERTICALLY IN THE WALL OF A GASOLINE SERVICE STATION (A ONE STORY BUILDING). THE BUILDING WAS ORIGINALLY A BLOCK WITH A STUCCO FINISH BUT, NOW THE MARK IS COVERED AND INACCESSIBLE BY SIDING WHICH HAS BEEN ADDED TO THE OUTSIDE OF THE BUILDING.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.963 12B = -88.911 09 = -88.799 03 = -88.776



Mn/DOT Name: 6303 B

NGS Name: 6303 B

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0046](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	32	152 N	42 W	475655.97	960314.78	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2012	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 18 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2008) Stamping: 6303 B 1977

2.7 MILES NORTH-NORTHWEST OF PLUMMER, 3.2 MILES NORTHWEST AND NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 344.10, 95.5 FEET WEST OF TRUNK HIGHWAY 59, 108.0 FEET SOUTH OF COUNTY ROAD 26, 1.6 FEET EAST OF A POWER POLE NUMBER 122 WITH A GUY WIRE, 75.3 FEET SOUTH-SOUTHWEST OF A POWER POLE, 102.7 FEET SOUTHWEST OF THE SOUTH END OF A METAL CULVERT, 0.5 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1121.271	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1121.425	.016	2/1					VERTICAL CONTROL SURVEY	2013	VSTAD
1121.307	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1120.054	.016	2/1					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1120.054	.016	2					VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1121.300	.262			1032.186	.197	2007	GPS - RTRN	2012	RTRN2012
1121.474	.262			1032.350	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -89.275 12B = -89.170 09 = -89.114 03 = -89.124

Lat/Lon and County Coordinates (Feet)

NAD83(2007)				Red Lake County				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 56 55.97436	96 03 14.78330			576603.679	264310.227	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)				Red Lake County				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 56 55.97378	96 03 14.78264			576603.725	264310.169	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
1900933.819	870382.404			892266.646	17438067.673	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
1900933.861	870382.344			892266.689	17438067.612	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_B-SL0046-3W-20SEP2012.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_B-SL0046-2-20SEP2012.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_B-SL0046-1-20SEP2012.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Sep 20, 2012
	Sep 20, 2012
	Sep 20, 2012



Mn/DOT Name: 6303 C

NGS Name: 6303 C

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: SL0050	Get Map
SW	4	151 N	42 W	475524.00	960243.00	2		NGS Quad / Sta Num : 47096111/ USGS Quad: PLUMMER	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2008	GOOD	Horz=NO Vert=YES	YES	RR	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STRUCTURE (MASSIVE)	VERTICAL CONTROL DISK	MNDT

Description: (2008)

Stamping: 6303 C 1977

0.9 MILE NORTH-NORTHWEST OF PLUMMER, IN THE SOUTHEAST CORNER OF A RAILROAD BRIDGE OVER THE CLEARWATER RIVER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 0.9 MILE NORTH-NORTHEAST ALONG TRUNK HIGHWAY 59 NORTH, AT TRUNK HIGHWAY 59 MILEPOINT 342.25, 117.0 FEET WEST OF TRUNK HIGHWAY 59, 1.6 FEET NORTH OF THE NORTH FACE OF AN ABUTMENT PARAPET, 5.1 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, ON THE BOTTOM ABUTMENT BELOW THE TRACKS BY 6.0 FEET.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1116.956	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1115.706	.016	2/1				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1115.706	.016	2				VERTICAL CONTROL SURVEY	1978 L24405

Geoid Separations(ft): GEOID18 = -89.291 12B = -89.186 09 = -89.130 03 = -89.127

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_C-SL0050-3W-25AUG2008.jpg	W	Aug 25, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_C-SL0050-2-25AUG2008.jpg		Aug 25, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_C-SL0050-1-25AUG2008.jpg		Aug 25, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 C 1

NGS Name: 6303 CI

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0051](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	4	151 N	42 W	475524.17	960244.74	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2012	GOOD	Horz=NO Vert=YES	YES	5407	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
BRIDGE ABUTMENT	VERTICAL CONTROL DISK	MNDT

Description: (2012)

Stamping: 6303 C 1 1977

0.9 MILE NORTH-NORTHWEST OF PLUMMER, IN THE SOUTHEAST CORNER OF TOWNSHIP ROAD BRIDGE NUMBER 5407 OVER THE CLEARWATER RIVER, 1.05 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER TO TRUNK HIGHWAY 59 MILEPOINT 341.95, THEN 0.05 MILE WEST ON 170TH STREET SOUTHEAST, THEN 0.3 MILE NORTHWEST ON A GRAVEL ROAD, 16.4 FEET EAST OF A TOWNSHIP ROAD, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1116.405	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1116.556	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD
1116.556	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1115.309	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1115.309	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1116.458	.262		1027.327	.197	2007	GPS - RTRN	2012	RTRN2012
1116.520	.262		1027.393	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -89.291 12B = -89.183 09 = -89.127 03 = -89.127

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 55 24.17438	96 02 44.73585	578687.893	255016.094	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 55 24.17384	96 02 44.73575	578687.900	255016.040	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1902623.284	861009.796	893943.797	17428689.628	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1902623.288	861009.741	893943.801	17428689.574	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_CI-SL0051-3NE-07MAY2008.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_CI-SL0051-2-07MAY2008.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_CI-SL0051-1-25AUG2008.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
NE	May 7, 2008
	May 7, 2008
	Aug 25, 2008



Mn/DOT Name: 6303 D

NGS Name: 6303 D

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0052](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	9	151 N	42 W	475438.13	960228.50	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

Monument Type

CONCRETE FOOTING - LARGE

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (2012)

Stamping: 6303 D 1977

IN PLUMMER, IN THE NORTHEAST CORNER OF THE CONCRETE BASE OF A STANDPIPE AT A WATER TANK, 0.25 MILE WEST ALONG CENTRAL AVENUE WEST FROM THE JUNCTION OF CENTRAL AVENUE WEST AND TRUNK HIGHWAY 59 IN PLUMMER, THEN 0.5 BLOCK SOUTH ON MINNESOTA STREET, 108.0 FEET EAST OF MINNESOTA STREET, 64.8 FEET NORTH OF THE NORTH WALL OF AN AUDITORIUM, 28.0 FEET SOUTH OF AN ALLEY, 34.8 FEET WEST OF THE NORTHWEST CORNER OF A FIRE DEPARTMENT BUILDING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1127.737	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1127.885	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD
1127.885	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1127.885	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1126.641	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1126.641	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.288 12B = -89.180 09 = -89.124 03 = -89.117

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_D-SL0052-3S-24SEP2012.jpg	S	Sep 24, 2012
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_D-SL0052-2-24SEP2012.jpg		Sep 24, 2012
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_D-SL0052-1-24SEP2012.jpg		Sep 24, 2012

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_E-SL0067-3N-20AUG2008.jpg	N	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_E-SL0067-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_E-SL0067-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 F

NGS Name: 6303 F

County: RED LAKE, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	2	150 N	42 W	475036.00	960019.00	2	

NGS ACRN: [SL0072](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2008	DESTROYED	Horz=NO Vert=NO	NO	RR		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STRUCTURE (MASSIVE)	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6303 F 1977

1.95 MILES NORTH OF BROOKS, IN THE SOUTHEAST CORNER OF A RAILROAD BRIDGE OVER THE LOST RIVER, 5.0 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 1.3 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 NORTH OF BROOKS, AT TRUNK HIGHWAY 59 MILEPOST 336.35.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1130.601	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1129.391	.016	2				VERTICAL CONTROL SURVEY	1978 L24405

Geoid Separations(ft): GEOID18 = -89.091 12B = -89.022 09 = -88.937 03 = -88.907

* No Horizontal Positions in the Database *



Mn/DOT Name: 6303 G

NGS Name: 6303 G

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	150 N	42 W	474933.03	960004.75	2	C

NGS ACRN: [SL0073](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=NO	YES		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 12 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2008)

Stamping: 6303 G 1977

0.8 MILE NORTH OF BROOKS, 0.55 MILE NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 335.20, 88.5 FEET WEST OF TRUNK HIGHWAY 59, 48.2 FEET WEST-NORTHWEST OF THE NORTH END OF A METAL CULVERT, 22.0 FEET NORTH OF A FIELD ENTRANCE, 34.2 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 0.9 FOOT EAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1122.816	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1122.937	.016	2/1					VERTICAL CONTROL SURVEY	2013	VMAHN
1122.937	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1121.737	.016	2/1					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1121.737	.016	2					VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1122.937				1033.951	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1122.937				1033.951	.010	2011	GPS - STATIC	2013	HTERR
1122.964	.131			1034.142	.066	1996	GPS - STATIC	2012	HTERR
1122.885	.262			1034.050	.197	2007	GPS - RTRN	2012	RTRN2012
1122.895	.262			1034.086	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.993 12B = -88.943 09 = -88.835 03 = -88.809

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>Red Lake County</u>			<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>Latitude</u>	<u>Longitude</u>								
47 49 33.02641	96 00 04.74706			589753.246	219481.539		.013		ADJUSTMENT
47 49 33.02641	96 00 04.74706			589753.246	219481.539		.013	C	GPS - STATIC
<u>NAD83(2007)</u>				<u>Red Lake County</u>			<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>Latitude</u>	<u>Longitude</u>								
47 49 33.02633	96 00 04.74854			589753.145	219481.530		.131	3	GPS - RTRN
<u>NAD83(1996)</u>				<u>Red Lake County</u>			<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>Latitude</u>	<u>Longitude</u>								
47 49 33.02583	96 00 04.74796			589753.185	219481.480		.033	C	GPS - STATIC
47 49 33.02610	96 00 04.74714			589753.241	219481.508		.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912176.193	825044.395	903451.792	17392699.821	.013		ADJUSTMENT	2013	GPS2946
1912176.193	825044.395	903451.792	17392699.821	.013	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912176.092	825044.391	903451.691	17392699.816	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912176.130	825044.338	903451.729	17392699.764	.033	C	GPS - STATIC	2012	HTERR
1912176.187	825044.364	903451.786	17392699.789	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_G-SL0073-3N-20AUG2008.jpg	N	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_G-SL0073-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_G-SL0073-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 H

NGS Name: 6303 H

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0074](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	11	150 N	42 W	474924.00	960000.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	NO	RR		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6303 H 1977

0.55 MILE NORTH-NORTHEAST OF BROOKS, IN THE SOUTHEAST CORNER OF A RAILROAD BRIDGE OVER THE HILL RIVER,
0.3 MILE NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT
TRUNK HIGHWAY 59 MILEPOINT 334.95, 200.0 FEET WEST OF TRUNK HIGHWAY 59, 3.8 FEET EAST OF THE EAST RAIL OF
THE RAILROAD TRACKS.

Station Notes

2008: THE MARK IS UNDER A RAILROAD TIE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1124.529	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1123.328	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -88.983 12B = -88.934 09 = -88.825 03 = -88.799

* No Horizontal Positions in the Database *



Mn/DOT Name: 6303 J

NGS Name: 6303 J

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO8540 Get Map
NW	2	150 N	42 W	475025.54	960012.78	2	C	NGS Quad / Sta Num : 47096112/ USGS Quad: BROOKS

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) Stamping: 6303 J 2010

1.5 MILES NORTH OF BROOKS, 1.55 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 336.15, 71.4 FEET EAST OF TRUNK HIGHWAY 59, 60.4 FEET SOUTH OF 225TH STREET SOUTHEAST, 37.3 FEET WEST OF AN EXTENDED FIELD ENTRANCE, 6.0 FEET NORTHWEST OF A RIGHT-OF-WAY POST (WITNESS POST).

Station Pair: LOST - RED LAKE, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u> Orthometric Height			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1125.693	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1125.818	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u> Orthometric Height			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1125.693			1036.740	.008	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1125.693	.131		1036.924	.066	1996	GPS - STATIC	2023	HERSK
1125.693			1036.740	.008	2011	GPS - STATIC	2023	HERSK
1125.808	.262		1036.730	.197	2011	GPS - OPUS	2022	GPSBM
1125.769	.262		1036.694	.197	2011	GPS - RTRN	2021	RTRN2021
1125.828			1036.740	.008	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1125.828			1036.740	.008	2011	GPS - STATIC	2013	HTERR
1125.818	.131		1036.924	.066	1996	GPS - STATIC	2012	HTERR
1125.756	.262		1036.835	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -89.078 12B = -89.012 09 = -88.920 03 = -88.891

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u> Geodetic Position		Red Lake County					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 50 25.53678	96 00 12.77687	589180.295	224799.959	.010		ADJUSTMENT	2023	GPS3597
47 50 25.53678	96 00 12.77687	589180.295	224799.959	.010	C	GPS - STATIC	2023	HERSK
47 50 25.53677	96 00 12.77791	589180.224	224799.958	.131	3	GPS - OPUS	2022	GPSBM
47 50 25.53636	96 00 12.77756	589180.248	224799.916	.131	3	GPS - RTRN	2021	RTRN2021
47 50 25.53678	96 00 12.77687	589180.295	224799.959	.010		ADJUSTMENT	2013	GPS2946
47 50 25.53678	96 00 12.77687	589180.295	224799.959	.010	C	GPS - STATIC	2013	HTERR
<u>NAD83(2007)</u> Geodetic Position		Red Lake County					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 50 25.53667	96 00 12.77744	589180.256	224799.948	.131	3	GPS - RTRN	2012	RTRN2012
<u>NAD83(1996)</u> Geodetic Position		Red Lake County					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 50 25.53631	96 00 12.77781	589180.231	224799.911	.033	C	GPS - STATIC	2023	HERSK
47 50 25.53631	96 00 12.77781	589180.231	224799.911	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911828.494	830381.543	903110.968	17398039.114	.010		ADJUSTMENT	2023	GPS3597
1911828.494	830381.543	903110.968	17398039.114	.010	C	GPS - STATIC	2023	HERSK
1911828.422	830381.544	903110.897	17398039.115	.131	3	GPS - OPUS	2022	GPSBM
1911828.445	830381.502	903110.919	17398039.073	.131	3	GPS - RTRN	2021	RTRN2021
1911828.494	830381.543	903110.968	17398039.114	.010		ADJUSTMENT	2013	GPS2946
1911828.494	830381.543	903110.968	17398039.114	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911828.454	830381.533	903110.928	17398039.104	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911828.428	830381.497	903110.902	17398039.068	.033	C	GPS - STATIC	2023	HERSK
1911828.428	830381.497	903110.902	17398039.068	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_J-DO8540-3E-20OCT2021.jpg	E	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_J-DO8540-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_J-DO8540-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 K

NGS Name: 6303 K

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	151 N	42 W	475559.26	960305.02	2	C

NGS ACRN: [DP1015](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2012	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 26 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012)

Stamping: 6303 K 2012

1.0 MILE NORTHWEST OF PLUMMER, 2.05 MILES NORTHWEST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 343.0, 60.6 FEET NORTHEAST OF TRUNK HIGHWAY 59, 32.3 FEET NORTHEAST OF MILEPOST 343, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.523	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1120.674	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.523			1031.422	.025	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1120.523	.131		1031.560	.066	1996	GPS - STATIC	2023	HERSK
1120.523			1031.422	.025	2011	GPS - STATIC	2023	HERSK
1120.556	.262		1031.382	.197	2011	GPS - RTRN	2013	RTRN2014
1120.493	.262		1031.369	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -89.285 12B = -89.176 09 = -89.124 03 = -89.127

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 55 59.25557	96 03 05.02354	577291.555	258565.341	.013		ADJUSTMENT	2023	GPS3597
47 55 59.25557	96 03 05.02354	577291.555	258565.341	.013	C	GPS - STATIC	2023	HERSK
47 55 59.25624	96 03 05.02285	577291.602	258565.410	.131	3	GPS - RTRN	2013	RTRN2014

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 55 59.25556	96 03 05.02532	577291.434	258565.340	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 55 59.25534	96 03 05.02420	577291.511	258565.318	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901378.311	864614.374	892703.345	17432297.108	.013		ADJUSTMENT	2023	GPS3597
1901378.311	864614.374	892703.345	17432297.108	.013	C	GPS - STATIC	2023	HERSK
1901378.360	864614.440	892703.394	17432297.174	.131	3	GPS - RTRN	2013	RTRN2014

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901378.190	864614.378	892703.223	17432297.112	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901378.265	864614.352	892703.299	17432297.087	.033	C	GPS - STATIC	2023	HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_K-DP1015-3SE-21OCT2013.jpg	SE	Oct 21, 2013
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_K-DP1015-2-21OCT2013.jpg		Oct 21, 2013
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_K-DP1015-1-21OCT2013.jpg		Oct 21, 2013

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 L

NGS Name: 6303 L

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DP1016](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	32	152 N	42 W	475650.66	960314.24	2	C	2012	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012)

Stamping: 6303 L 2012

2.0 MILES NORTHWEST OF PLUMMER, 3.1 MILES NORTHWEST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 344.0, 58.8 FEET WEST OF TRUNK HIGHWAY 59, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1119.470	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1119.624	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1119.470			1030.323	.031	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1119.470	.131		1030.464	.066	1996	GPS - STATIC	2023	HERSK
1119.470			1030.323	.031	2011	GPS - STATIC	2023	HERSK
1119.437	.262		1030.270	.197	2011	GPS - RTRN	2013	RTRN2014
1119.496	.262		1030.382	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -89.275 12B = -89.170 09 = -89.114 03 = -89.124

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 56 50.66009	96 03 14.23624	576643.102	263771.857	.013		ADJUSTMENT
47 56 50.66009	96 03 14.23624	576643.102	263771.857	.013	C	GPS - STATIC
47 56 50.66055	96 03 14.23723	576643.034	263771.903	.131	3	GPS - RTRN
<u>NAD83(2007)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 56 50.66020	96 03 14.23811	576642.974	263771.867	.131	3	GPS - RTRN
<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 56 50.65987	96 03 14.23695	576643.053	263771.834	.033	C	GPS - STATIC



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1900950.458	869842.922	892282.546	17437527.988	.013		ADJUSTMENT	2023	GPS3597
1900950.458	869842.922	892282.546	17437527.988	.013	C	GPS - STATIC	2023	HERSK
1900950.392	869842.972	892282.481	17437528.037	.131	3	GPS - RTRN	2013	RTRN2014

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1900950.331	869842.938	892282.419	17437528.004	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1900950.409	869842.902	892282.497	17437527.968	.033	C	GPS - STATIC	2023	HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_L-DP1016-3W-21OCT2013.jpg	W	Oct 21, 2013
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_L-DP1016-2-21OCT2013.jpg		Oct 21, 2013
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_L-DP1016-1-21OCT2013.jpg		Oct 21, 2013

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 M

NGS Name: 6303 M

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8852](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	15	151 N	42 W	475328.68	960136.92		C	2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018) Stamping: 6303 M 2018

1.7 MILES SOUTH OF PLUMMER, 1.0 MILE SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 339.9, 30.7 FEET NORTH-NORTHEAST OF TRUNK HIGHWAY 59, 118.7 FEET NORTH-NORTHWEST OF 190TH STREET SOUTHEAST, 97.1 FEET NORTHWEST OF A RIGHT-OF-WAY POST, 1.5 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order</u>	<u>(/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1131.986				1042.846	.028	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1131.989	.131			1042.987	.066	1996	GPS - STATIC	2023	HERSK
1131.986				1042.846	.028	2011	GPS - STATIC	2023	HERSK
1131.989	.262			1042.816	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -89.275 12B = -89.173 09 = -89.117 03 = -89.101

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 53 28.68194	96 01 36.91914	583358.471	243332.533	.013		ADJUSTMENT	2023	GPS3597
47 53 28.68194	96 01 36.91914	583358.471	243332.533	.013	C	GPS - STATIC	2023	HERSK
47 53 28.68183	96 01 36.91929	583358.461	243332.522	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 53 28.68169	96 01 36.91987	583358.422	243332.507	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1906795.517	849140.965	898101.311	17416811.248	.013		ADJUSTMENT	2023	GPS3597
1906795.517	849140.965	898101.311	17416811.248	.013	C	GPS - STATIC	2023	HERSK
1906795.506	849140.954	898101.301	17416811.238	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1906795.466	849140.942	898101.261	17416811.225	.033	C	GPS - STATIC	2023	HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_M-DR8852-3N-23OCT2018.jpg	N	Oct 23, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_M-DR8852-2-23OCT2018.jpg		Oct 23, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_M-DR8852-1-23OCT2018.jpg		Oct 23, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 N

NGS Name: 6303 N

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8853](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	151 N	42 W	475143.19	960039.27		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018)

Stamping: 6303 N 2018

3.2 MILES NORTH OF BROOKS, 3.1 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 337.7, 155.6 FEET EAST OF TRUNK HIGHWAY 59, 25.6 FEET SOUTH OF COUNTY ROAD 21 (210TH STREET SOUTHEAST), 288.2 FEET WEST OF 220TH AVENUE SOUTHEAST, 1.5 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1135.139			1046.081	.027	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1135.126	.131		1046.222	.066	1996	GPS - STATIC	2023	HERSK
1135.139			1046.081	.027	2011	GPS - STATIC	2023	HERSK
1135.106	.262		1046.005	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -89.193 12B = -89.101 09 = -89.035 03 = -89.009

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 51 43.18648	96 00 39.26875	587336.784	232660.014	.013		ADJUSTMENT	2023	GPS3597
47 51 43.18648	96 00 39.26875	587336.784	232660.014	.013	C	GPS - STATIC	2023	HERSK
47 51 43.18646	96 00 39.27000	587336.698	232660.011	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 51 43.18624	96 00 39.26947	587336.734	232659.989	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1910318.905	838311.380	901611.366	17405973.467	.013		ADJUSTMENT	2023	GPS3597
1910318.905	838311.380	901611.366	17405973.467	.013	C	GPS - STATIC	2023	HERSK
1910318.819	838311.381	901611.281	17405973.468	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1910318.855	838311.357	901611.316	17405973.445	.033	C	GPS - STATIC	2023	HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_N-DR8853-3S-23OCT2018.jpg	S	Oct 23, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_N-DR8853-2-23OCT2018.jpg		Oct 23, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_N-DR8853-1-23OCT2018.jpg		Oct 23, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6303 P

NGS Name: 6303 P

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR8854 Get Map
NW	11	150 N	42 W	474950.00	960005.87		C	NGS Quad / Sta Num : 47096112/ USGS Quad: BROOKS

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 29 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018) Stamping: 6303 P 2018

1.1 MILES NORTH OF BROOKS, 0.8 MILE NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 335.5, 63.7 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 59, 22.2 FEET SOUTH-SOUTHEAST OF A FIELD ENTRANCE, 53.4 FEET SOUTH OF A POWER POLE, 1.5 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1126.576			1037.688	.027	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1126.566	.131		1037.829	.066	1996	GPS - STATIC	2023	HERSK
1126.576			1037.688	.027	2011	GPS - STATIC	2023	HERSK
1126.645	.262		1037.678	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -89.019 12B = -88.966 09 = -88.861 03 = -88.835

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 49.99860	96 00 05.86679	589668.713	221201.009	.013		ADJUSTMENT	2023	GPS3597
47 49 49.99860	96 00 05.86679	589668.713	221201.009	.013	C	GPS - STATIC	2023	HERSK
47 49 49.99803	96 00 05.86756	589668.661	221200.951	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 49.99836	96 00 05.86751	589668.664	221200.984	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1912164.382	826765.666	903442.224	17394421.651	.013		ADJUSTMENT	2023	GPS3597
1912164.382	826765.666	903442.224	17394421.651	.013	C	GPS - STATIC	2023	HERSK
1912164.327	826765.610	903442.170	17394421.596	.131	3	GPS - RTRN	2018	RTRN2018

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1912164.332	826765.643	903442.174	17394421.629	.033	C	GPS - STATIC	2023	HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_P-DR8854-3E-23OCT2018.jpg	E	Oct 23, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_P-DR8854-2-23OCT2018.jpg		Oct 23, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6303_P-DR8854-1-23OCT2018.jpg		Oct 23, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 A

NGS Name: 6304 A

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6402](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	1	150 N	44 W	474955.70	961324.30	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1954	2019	GOOD	Horz=NO Vert=NO	YES	6829	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1973)

Stamping: 6304 A 1973

4.0 MILES WEST OF TERREBONNE, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BOX CULVERT NUMBER 6829 OVER BADGER CREEK, 1.0 MILE NORTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 117, THEN 4.0 MILES WEST ON TRUNK HIGHWAY 92 WEST, AT TRUNK HIGHWAY 92 MILEPOINT 2.00.

Station Notes

THE MARK WAS SET IN A CULVERT IN 1954 BUT STAMPED IN 1973 WHEN FIRST USED.

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO FALL RISK AND TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1051.146	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1051.268	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1050.149	.033	3				VERTICAL CONTROL SURVEY	1954	CS6304

Geoid Separations(ft): GEOID18 = -88.881 12B = -88.792 09 = -88.740 03 = -88.743

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_A-DO6402-3S-19AUG2008.jpg	S	Aug 19, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_A-DO6402-2-19AUG2008.jpg		Aug 19, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_A-DO6402-1-19AUG2008.jpg		Aug 19, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 AB

NGS Name: 6304 AB

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0076](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NE	15	150 N	42 W	474906.42	960046.43	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2012	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (2011)

Stamping: 6304 AB

0.55 MILE NORTHWEST OF BROOKS, IN THE SOUTHEAST HEADWALL OF A TRUNK HIGHWAY 92 BOX CULVERT, 46.0 FEET SOUTH OF TRUNK HIGHWAY 92, BRIDGE NUMBER 8836, 0.6 MILE WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59, AT TRUNK HIGHWAY 92 MILEPOINT 12.40.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1112.672	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1112.803	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1112.803	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR
1112.816	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1111.612	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1111.612	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1112.727	.262		1023.958	.197	2007	GPS - RTRN	2012	RTRN2012
1112.682	.262		1023.938	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.930 12B = -88.871 09 = -88.773 03 = -88.740

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 06.42142	96 00 46.42943	586921.189	216772.363	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 06.42160	96 00 46.42804	586921.284	216772.381	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1909232.610	822457.640	900503.902	17390116.073	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1909232.706	822457.654	900503.998	17390116.088	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_AB-SL0076-3S-20AUG2008.jpg	S	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_AB-SL0076-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_AB-SL0076-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 B

NGS Name: 6304 B

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6405](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
NE	8	150 N	43 W	474955.90	961056.00	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1954	2010	GOOD	Horz=NO Vert=YES	YES	8834	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (2011)

Stamping: 6304 B 1954

2.0 MILES WEST OF TERREBONNE, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BOX CULVERT NUMBER 8834 OVER A STREAM, 1.0 MILE NORTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 117, THEN 2.0 MILES WEST ALONG TRUNK HIGHWAY 92 WEST, AT TRUNK HIGHWAY 92 MILEPOINT 3.94, 24.0 FEET SOUTH OF TRUNK HIGHWAY 92.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1079.995	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1080.119	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1079.191	.033	3				VERTICAL CONTROL SURVEY	1954	CS6304

Geoid Separations(ft): GEOID18 = -88.871 12B = -88.776 09 = -88.720 03 = -88.730

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_B-DO6405-3S-19AUG2008.jpg	S	Aug 19, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_B-DO6405-2-19AUG2008.jpg		Aug 19, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_B-DO6405-1-19AUG2008.jpg		Aug 19, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 C

NGS Name: 6304 C

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6409](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	150 N	43 W	474956.00	960816.70	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1954	2010	GOOD	Horz=NO Vert=YES	YES	8835	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (2011)

Stamping: 6304 C 1954

0.2 MILE WEST OF TERREBONNE, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BOX CULVERT NUMBER 8835 AT A DITCH, IN THE SOUTHEAST QUADRANT OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 IN TERREBONNE, 17.0 FEET SOUTH OF TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 92 MILEPOINT 6.00, 34.0 FEET EAST OF COUNTY ROAD 12.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1091.888	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1092.016	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1091.100	.033	3				VERTICAL CONTROL SURVEY	1954	CS6304

Geoid Separations(ft): GEOID18 = -88.868 12B = -88.776 09 = -88.714 03 = -88.720

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_C-DO6409-3S-19AUG2008.jpg	S	Aug 19, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_C-DO6409-2-19AUG2008.jpg		Aug 19, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_C-DO6409-1-19AUG2008.jpg		Aug 19, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 D

NGS Name: 6304 D

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	150 N	43 W	475000.00	960812.00		

NGS ACRN:
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1954	2008	DESTROYED	Horz=NO Vert=NO	NO	8819		SEE DESCRIPTION

Monument Type

CULVERT - ANY SIZE, ANY TYPE

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1973)

Stamping: 6304 D

IN TERREBONNE, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BOX CULVERT 8819 AT A DITCH, 0.2 MILE WEST ALONG TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12) FROM THE JUNCTION OF TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12) IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 6.11.

Station Notes

A NEW CAP INSTALLED ON THE BOX CULVERT. WITH A NEW REMOVABLE DISK IN PLACE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1084.991	.033	3				VERTICAL CONTROL SURVEY	1954 CS6304

Geoid Separations(ft): GEOID18 = -88.878 12B = -88.783 09 = -88.724 03 = -88.727

* No Horizontal Positions in the Database *



Mn/DOT Name: 6304 E

NGS Name: 6304 E

County: RED LAKE, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	17	150 N	42 W	474905.31	960354.27	2	3

NGS ACRN: [DO6414](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1954	2008	GOOD	Horz=NO Vert=YES	YES	6830	FLUSH	NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

BENCH MARK DISK

Mon. Agency

MNDT

Description: (1973)

Stamping: 6304 E 1954

3.0 MILES WEST OF BROOKS, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BRIDGE NUMBER 6830 OVER THE POPLAR RIVER, 0.1 MILE EAST ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 2.9 MILES NORTH AND WEST ALONG TRUNK HIGHWAY 92 WEST, AT TRUNK HIGHWAY 92 MILEPOINT 9.93.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1113.075	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1113.213	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1105.451	.033	3				VERTICAL CONTROL SURVEY	1954	CS6304

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1113.128	.262		1024.483	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.819 12B = -88.756 09 = -88.668 03 = -88.645

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 05.30530	96 03 54.26790	574101.725	216604.912	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1896419.271	822831.882	887686.792	17390507.100	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_E-DO6414-3S-20AUG2008.jpg	S	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_E-DO6414-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_E-DO6414-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 F

NGS Name: 6304 F

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6416](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	8	150 N	42 W	474905.84	960335.85	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1954	2008	GOOD	Horz=NO Vert=YES	YES	6830	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (2011)

Stamping: 6304 F 1954

2.8 MILES WEST OF BROOKS, IN THE EAST END OF THE NORTH HEADWALL OF TRUNK HIGHWAY 12, 0.1 MILE EAST ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 2.7 MILES NORTH AND WEST ALONG TRUNK HIGHWAY 92 WEST, AT TRUNK HIGHWAY 92 MILEPOINT 10.15, 28.0 FEET LEFT OF TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 92 STATION 542+66.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1107.869	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1108.006	.016	2/1					VERTICAL CONTROL SURVEY	2012	VTERR

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1107.330	.033	3					VERTICAL CONTROL SURVEY	1954	CS6304

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1107.921	.262			1019.270	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.829 12B = -88.766 09 = -88.678 03 = -88.651

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				Red Lake County				Project Info	
Geodetic Position				X		Y		Year	Reference
Latitude	Longitude					Acc	Order		
47 49 05.84004	96 03 35.84689			575358.747	216664.046	.131	3	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X		Y		Year	Reference
X	Y					Acc	Order		
1897677.496	822837.856			888945.455	17390511.440	.131	3	2008	RTRN2008

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_F-DO6416-3N-20AUG2008.jpg	N	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_F-DO6416-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_F-DO6416-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 G

NGS Name: 6304 G

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	15	150 N	42 W	474905.48	960144.16	2	C

NGS ACRN: [DO6418](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: 6304 G 2010

1.4 MILES WEST OF BROOKS, 1.4 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 11.60, 54.1 FEET SOUTH OF TRUNK HIGHWAY 92, 19.6 FEET WEST OF A FIELD ENTRANCE, 115.5 FEET WEST OF A 30.0 INCH DIAMETER COTTONWOOD TREE, 10.5 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.775	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1120.910	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.982	.262		1032.091	.197	2011	GPS - OPUS	2022	GPSBM
1120.795	.262		1031.904	.197	2011	GPS - RTRN	2021	RTRN2021
1120.923			1032.016	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1120.923			1032.016	.010	2011	GPS - STATIC	2013	HTERR
1120.897	.131		1032.209	.066	1996	GPS - STATIC	2012	HTERR
1120.825	.262		1032.085	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -88.891 12B = -88.829 09 = -88.737 03 = -88.701

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.48342	96 01 44.15516	582981.849	216659.689	.131	3	GPS - OPUS	2022	GPSBM
47 49 05.48367	96 01 44.15491	582981.866	216659.714	.131	3	GPS - RTRN	2021	RTRN2021
47 49 05.48392	96 01 44.15452	582981.892	216659.740	.013		ADJUSTMENT	2013	GPS2946
47 49 05.48392	96 01 44.15452	582981.892	216659.740	.013	C	GPS - STATIC	2013	HTERR

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.48375	96 01 44.15542	582981.831	216659.722	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.48333	96 01 44.15540	582981.832	216659.680	.033	C	GPS - STATIC	2012	HTERR



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1905292.566	822511.488	896562.648	17390175.061	.131	3	GPS - OPUS	2022	GPSBM
1905292.584	822511.512	896562.667	17390175.086	.131	3	GPS - RTRN	2021	RTRN2021
1905292.612	822511.537	896562.694	17390175.110	.013		ADJUSTMENT	2013	GPS2946
1905292.612	822511.537	896562.694	17390175.110	.013	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1905292.550	822511.522	896562.632	17390175.095	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1905292.550	822511.479	896562.632	17390175.053	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_G-DO6418-3S-20OCT2021.jpg	S	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_G-DO6418-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_G-DO6418-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 H

NGS Name: 6304 H

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO6417	Get Map
NW	16	150 N	42 W	474905.25	960231.12	2	C	NGS Quad / Sta Num : 47096112/ USGS Quad: BROOKS	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2012	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011) Stamping: 6304 H 2010

2.0 MILES WEST OF BROOKS, 2.0 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 11.00, 54.0 FEET SOUTH OF TRUNK HIGHWAY 92, 18.8 FEET WEST OF A FIELD ENTRANCE, 70.1 FEET SOUTHEAST OF TRUNK HIGHWAY 92 MILEPOST 11, 10.3 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1117.846	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1117.983	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1118.000			1029.119	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1118.000			1029.119	.009	2011	GPS - STATIC	2013 HTERR
1117.977	.131		1029.306	.066	1996	GPS - STATIC	2012 HTERR
1117.918	.262		1029.211	.197	2007	GPS - RTRN	2012 RTRN2012

Geoid Separations(ft): GEOID18 = -88.861 12B = -88.799 09 = -88.710 03 = -88.678

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 05.24705	96 02 31.12028	579776.582	216622.001	.010		ADJUSTMENT	2013	GPS2946
47 49 05.24705	96 02 31.12028	579776.582	216622.001	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)		Red Lake County					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 05.24702	96 02 31.12039	579776.575	216621.998	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)		Red Lake County					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 05.24651	96 02 31.12115	579776.523	216621.946	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1902089.007	822609.236	893358.157	17390277.006	.010		ADJUSTMENT	2013	GPS2946
1902089.007	822609.236	893358.157	17390277.006	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1902089.000	822609.233	893358.150	17390277.003	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1902088.946	822609.184	893358.096	17390276.954	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_H-DO6417-3S-21JUL2010.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_H-DO6417-2-21JUL2010.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_H-DO6417-1-21JUL2010.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Jul 21, 2010
	Jul 21, 2010
	Jul 21, 2010



Mn/DOT Name: 6304 J

NGS Name: 6304 J

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6411](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	6	150 N	42 W	474957.42	960540.56	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: 6304 J 2010

1.8 MILES EAST OF TERREBONNE, 2.0 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 8.00, 51.2 FEET NORTH OF TRUNK HIGHWAY 92, 175.4 FEET EAST OF 180TH AVENUE SOUTHEAST, 100.6 FEET NORTHEAST OF TRUNK HIGHWAY MILEPOST 8, 12.5 FEET WEST OF A FIELD ENTRANCE, 7.5 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1107.304	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1107.439	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1107.504	.262		1018.613	.197	2011	GPS - OPUS	2022	GPSBM
1107.321	.262		1018.430	.197	2011	GPS - RTRN	2021	RTRN2021
1107.422			1018.528	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1107.422			1018.528	.010	2011	GPS - STATIC	2013	HTERR
1107.445	.131		1018.709	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.891 12B = -88.809 09 = -88.737 03 = -88.730

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 57.41893	96 05 40.56292	566828.483	221858.808	.131	3	GPS - OPUS	2022	GPSBM
47 49 57.41930	96 05 40.56278	566828.493	221858.846	.131	3	GPS - RTRN	2021	RTRN2021
47 49 57.41892	96 05 40.56233	566828.524	221858.808	.013		ADJUSTMENT	2013	GPS2946
47 49 57.41892	96 05 40.56233	566828.524	221858.808	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 57.41851	96 05 40.56334	566828.455	221858.766	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1889375.452	828387.606	880647.764	17396073.959	.131	3	GPS - OPUS	2022	GPSBM
1889375.463	828387.643	880647.775	17396073.996	.131	3	GPS - RTRN	2021	RTRN2021
1889375.492	828387.603	880647.804	17396073.956	.013		ADJUSTMENT	2013	GPS2946
1889375.492	828387.603	880647.804	17396073.956	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1889375.421	828387.564	880647.733	17396073.917	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_J-DO6411-3N-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_J-DO6411-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_J-DO6411-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 6304 K

NGS Name: 6304 K

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO6410	Get Map
SW	1	150 N	43 W	474957.30	960700.53	2	C	NGS Quad / Sta Num : 47096112/ USGS Quad: BROOKS	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011) Stamping: 6304 K 2010

0.8 MILE EAST OF TERREBONNE, 1.0 MILE EAST ALONG TRUNK HIGHWAY 92 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 7.00, 80.4 FEET NORTH OF TRUNK HIGHWAY 92, 25.0 FEET EAST OF 170TH AVENUE SOUTHEAST, 20.0 FEET SOUTH OF A FIELD ENTRANCE, 14.3 FEET NORTHWEST OF A TELEPHONE PEDESTAL, 2.2 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1097.996	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1098.124	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1098.174	.262		1009.296	.197	2011	GPS - OPUS	2022 GPSBM
1098.206	.262		1009.329	.197	2011	GPS - OPUS	2022 GPSBM
1097.996	.262		1009.115	.197	2011	GPS - RTRN	2021 RTRN2021
1098.105			1009.227	.011	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1098.105			1009.227	.011	2011	GPS - STATIC	2013 HTERR
1098.128	.131		1009.401	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -88.878 12B = -88.792 09 = -88.724 03 = -88.724

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 57.29945	96 07 00.52770	561372.424	221828.279	.131	3	GPS - OPUS	2022	GPSBM
47 49 57.29963	96 07 00.52741	561372.444	221828.298	.131	3	GPS - OPUS	2022	GPSBM
47 49 57.29985	96 07 00.52709	561372.466	221828.320	.131	3	GPS - RTRN	2021	RTRN2021
47 49 57.30006	96 07 00.52677	561372.487	221828.341	.016		ADJUSTMENT	2013	GPS2946
47 49 57.30006	96 07 00.52677	561372.487	221828.341	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 57.29966	96 07 00.52780	561372.417	221828.301	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1883923.719	828587.583	875194.330	17396281.151	.131	3	GPS - OPUS	2022	GPSBM
1883923.739	828587.600	875194.350	17396281.169	.131	3	GPS - OPUS	2022	GPSBM
1883923.762	828587.622	875194.373	17396281.190	.131	3	GPS - RTRN	2021	RTRN2021
1883923.785	828587.642	875194.396	17396281.210	.016		ADJUSTMENT	2013	GPS2946
1883923.785	828587.642	875194.396	17396281.210	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1883923.713	828587.604	875194.324	17396281.173	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_K-DO6410-3N-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_K-DO6410-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_K-DO6410-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 6304 L

NGS Name: 6304 L

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6415](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	8	150 N	42 W	474905.60	960343.80	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1954	2010	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (2011) **Stamping:** 6304 L 2010

3.0 MILES WEST OF BROOKS, 2.95 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 10.05, 29.5 FEET NORTH OF TRUNK HIGHWAY 92, 150.0 FEET WEST OF DRIVEWAY FIRE NUMBER 19616.

Station Notes

THE MARK WAS SET IN A CULVERT IN 1954 WHEN BUILT BUT STAMPED IN 2010 WHEN USED.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1106.067	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1106.205	.016	2/1					VERTICAL CONTROL SURVEY	2012	VTERR

Geoid Separations(ft): GEOID18 = -88.822 12B = -88.763 09 = -88.674 03 = -88.648

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_L-DO6415-3N-29JUN2010.jpg	N	Jun 29, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_L-DO6415-2-29JUN2010.jpg		Jun 29, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_L-DO6415-1-29JUN2010.jpg		Jun 29, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 M

NGS Name: 6304 M

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6406](#)

[Get Map](#)

NGS Quad / Sta Num : 47096113/

USGS Quad: TERREBONNE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	4	150 N	43 W	474956.86	961012.92	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2010	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: 6304 M 2010

1.6 MILES WEST OF TERREBONNE, 1.5 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 4.50, 70.5 FEET NORTH OF TRUNK HIGHWAY 92, 20.1 FEET WEST OF A FIELD ENTRANCE, 82.1 FEET WEST OF A GUYED POWER POLE, 3.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1086.648	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1086.769	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1086.737			997.875	.014	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1086.737			997.875	.014	2011	GPS - STATIC	2013 HTERR
1086.776	.131		998.043	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -88.868 12B = -88.773 09 = -88.720 03 = -88.727

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 56.85832	96 10 12.91628	548245.591	221745.682	.016		ADJUSTMENT	2013	GPS2946
47 49 56.85832	96 10 12.91628	548245.591	221745.682	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 56.85791	96 10 12.91729	548245.522	221745.640	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1870806.910	829059.573	862073.202	17396770.513	.016		ADJUSTMENT	2013	GPS2946
1870806.910	829059.573	862073.202	17396770.513	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1870806.840	829059.534	862073.132	17396770.475	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_M-DO6406-3N-21JUL2010.jpg	N	Jul 21, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_M-DO6406-2-21JUL2010.jpg		Jul 21, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_M-DO6406-1-21JUL2010.jpg		Jul 21, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6304 N

NGS Name: 6304 N

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6401](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	1	150 N	44 W	474956.83	961420.81	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2019	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010)

Stamping: 6304 N 2010

4.8 MILES WEST OF TERREBONNE, 4.0 MILES SOUTH OF RED LAKE FALLS, 1.3 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 32 AT TRUNK HIGHWAY MILEPOINT 1.25, 48.6 FEET NORTH OF TRUNK HIGHWAY 92, 13.3 FEET EAST OF A FIELD ENTRANCE, 3.3 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1058.922	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1059.043	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1058.892	.262		970.005	.197	2011	GPS - RTRN	2019	RTRN2019
1059.027			970.133	.013	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1059.027			970.133	.013	2011	GPS - STATIC	2013	HTERR
1059.053	.131		970.290	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.888 12B = -88.802 09 = -88.750 03 = -88.753

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 56.83203	96 14 20.81225	531331.228	221707.570	.131	3	GPS - RTRN	2019	RTRN2019
47 49 56.83144	96 14 20.81523	531331.025	221707.510	.016		ADJUSTMENT	2013	GPS2946
47 49 56.83144	96 14 20.81523	531331.025	221707.510	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 56.83098	96 14 20.81625	531330.955	221707.463	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1853908.350	829735.993	845168.716	17397469.377	.131	3	GPS - RTRN	2019	RTRN2019
1853908.144	829735.942	845168.511	17397469.325	.016		ADJUSTMENT	2013	GPS2946
1853908.144	829735.942	845168.511	17397469.325	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1853908.073	829735.898	845168.439	17397469.281	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_N-DO6401-3N-03OCT2019.jpg	N	Oct 3, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_N-DO6401-2-03OCT2019.jpg		Oct 3, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6304_N-DO6401-1-03OCT2019.jpg		Oct 3, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 AB

NGS Name: 6305 AB

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0622](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NE	14	150 N	42 W	474906.61	955936.71	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2012	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

Monument Type

CULVERT - ANY SIZE, ANY TYPE

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (2002)

Stamping: 6305 AB 1977

0.5 MILE NORTHEAST OF BROOKS, IN THE SOUTHEAST HEADWALL OF A TRUNK HIGHWAY 92 BOX CULVERT, 0.3 MILE EAST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59, AT TRUNK HIGHWAY 92 MILEPOINT 13.30, 32.5 FEET SOUTH OF TRUNK HIGHWAY 92.

Station Notes

RESTAMP AND RETAKE PHOTO ONE 7/1/13.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1126.231	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1126.356	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1126.356	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR
1126.356	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1125.149	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1126.254	.262		1037.442	.197	2007	GPS - RTRN	2012	RTRN2012
1126.235	.262		1037.442	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.979 12B = -88.927 09 = -88.812 03 = -88.792

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 06.61215	95 59 36.70646	591679.652	216814.066	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 06.61252	95 59 36.70575	591679.700	216814.104	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1913987.936	822298.293	905260.530	17389950.495	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1913987.986	822298.329	905260.580	17389950.530	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_AB-SK0622-3S-20AUG2008.jpg	S	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_AB-SK0622-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_AB-SK0622-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 B

NGS Name: 6305 B

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	7	150 N	41 W	474910.00	955700.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2002	DESTROYED	Horz=NO Vert=NO	NO	8802		SEE DESCRIPTION

Monument Type

BRIDGE ABUTMENT

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (2002)

Stamping: 6305 B

2.5 MILES EAST OF BROOKS, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BOX CULVERT 8802 AT THE HILL RIVER,
0.1 MILE WEST ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET)
AND IOWA AVENUE IN BROOKS, THEN 2.4 MILES EAST ALONG TRUNK HIGHWAY 92 EAST, AT TRUNK HIGHWAY 92
MILEPOINT 15.33.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1136.179	.033	3				VERTICAL CONTROL SURVEY	1954 CS6305

Geoid Separations(ft): GEOID18 = -89.094 12B = -89.048 09 = -88.927 03 = -88.897

* No Horizontal Positions in the Database *



Mn/DOT Name: 6305 C

NGS Name: 6305 C

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	150 N	41 W	474914.00	955628.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2009	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	SURVEY DISK	MNDT

Description: (1953)

Stamping:

2.9 MILES EAST-NORTHEAST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 2.9 MILES EAST-NORTHEAST ALONG TRUNK HIGHWAY 95 EAST.

Station Notes

THE BOX CULVERT HAS BEEN REPLACED BY A REINFORCED CONCRETE PIPE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1139.811	.033	3				VERTICAL CONTROL SURVEY	1954	CS6305

Geoid Separations(ft): GEOID18 = -89.117 12B = -89.078 09 = -88.957 03 = -88.920

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_C-2-19NOV2009.jpg		Nov 19, 2009
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 D

NGS Name: 6305 D

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	15	150 N	41 W	474906.00	955318.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2009	NOT FOUND	Horz=NO Vert=YES	YES	8892		SEE DESCRIPTION

Monument Type

BRIDGE ABUTMENT

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1973)

Stamping: 6305 D

5.1 MILES EAST OF BROOKS, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 92 BOX CULVERT 8892 AT A DITCH, 2.9 MILES EAST-NORTHEAST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 5.3 MILES EAST-NORTHEAST ALONG TRUNK HIGHWAY 95 EAST, AT TRUNK HIGHWAY 92 MILEPOINT 18.14.

Station Notes

11-19-2009 FOUND THAT THE HEADWALL HAS BEEN BUILT UP WITH TREATED WOOD AND IS COVERING THE DISK . THE MARK IS NOT ACCESSIBLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1154.220	.033	3				VERTICAL CONTROL SURVEY	1954	CS6305	

Geoid Separations(ft): GEOID18 = -89.209 12B = -89.186 09 = -89.078 03 = -88.993

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_D-2-19NOV2009.jpg		Nov 19, 2009
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 E

NGS Name: 6305 E

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	14	150 N	41 W	474908.00	955242.00		

NGS ACRN:
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1953)

Stamping:

1.5 MILES SOUTHWEST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 0.5 MILE WEST ALONG TRUNK HIGHWAY 92 WEST, 75.0 FEET RIGHT OF TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 92 STATION 295+45.

Station Notes

THE DISK WAS REMOVED.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1151.540	.033	3				VERTICAL CONTROL SURVEY	1954 CS6305

Geoid Separations(ft): GEOID18 = -89.226 12B = -89.209 09 = -89.101 03 = -89.016

* No Horizontal Positions in the Database *



Mn/DOT Name: 6305 F

NGS Name: 6305 F

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	150 N	41 W	474638.00	955133.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2008	NOT FOUND	Horz=YES Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1953)

Stamping:

4.3 MILES SOUTH OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 2.9 MILES SOUTH ALONG TRUNK HIGHWAY 92 EAST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1176.930	.033	3				VERTICAL CONTROL SURVEY	1954 CS6305

Geoid Separations(ft): GEOID18 = -89.153 12B = -89.137 09 = -89.019 03 = -88.960

* No Horizontal Positions in the Database *



Mn/DOT Name: 6305 H

NGS Name: 6305 H

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6433](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	36	150 N	41 W	474630.87	955013.98	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 65 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: 6305 H 2010

4.5 MILES SOUTH-SOUTHEAST OF OKLEE (AT THE COUNTY LINE), 3.95 MILES SOUTH ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 22 AND TRUNK HIGHWAY 92, (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), AT TRUNK HIGHWAY 92 MILEPOINT 23.50, 64.6 FEET SOUTH OF TRUNK HIGHWAY 92, 26.7 FEET WEST OF 300TH AVENUE SOUTHEAST, 27.8 FEET EAST OF A POWER POLE, 32.3 FEET EAST OF A TELEPHONE PEDESTAL NUMBER FS9E4, 4.3 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1180.063	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1180.139	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1180.178	.262		1091.015	.197	2011	GPS - OPUS	2020 GPSBM
1180.067	.262		1090.903	.197	2011	GPS - RTRN	2020 RTRN2020
1180.244			1091.012	.008	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1180.244			1091.012	.008	2011	GPS - STATIC	2013 HTERR
1180.149	.131		1091.169	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -89.163 12B = -89.163 09 = -89.035 03 = -88.970

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 46 30.87152	95 50 13.98368	630193.018	201257.030	.131	3	GPS - OPUS	2020	GPSBM
47 46 30.87144	95 50 13.98333	630193.042	201257.022	.131	3	GPS - RTRN	2020	RTRN2020
47 46 30.87175	95 50 13.98280	630193.078	201257.053	.010		ADJUSTMENT	2013	GPS2946
47 46 30.87175	95 50 13.98280	630193.078	201257.053	.010	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 46 30.87133	95 50 13.98371	630193.017	201257.010	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1951804.489	805130.384	943065.668	17372729.112	.131	3	GPS - OPUS	2020	GPSBM
1951804.513	805130.374	943065.692	17372729.103	.131	3	GPS - RTRN	2020	RTRN2020
1951804.550	805130.404	943065.729	17372729.133	.010		ADJUSTMENT	2013	GPS2946
1951804.550	805130.404	943065.729	17372729.133	.010	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1951804.486	805130.364	943065.665	17372729.093	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_H-DO6433-3S-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_H-DO6433-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_H-DO6433-1-16JUN2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020



Mn/DOT Name: 6305 J

NGS Name: 6305 J

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6432](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	26	150 N	41 W	474643.92	955132.46	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2010	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 52 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011) **Stamping:** 6305 J 2010

4.4 MILES SOUTH OF OKLEE, 2.8 MILES SOUTH ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222, (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), AT TRUNK HIGHWAY 92 MILEPOINT 22.3, 55.2 FEET WEST OF TRUNK HIGHWAY 92, 13.1 FEET SOUTH OF A FIELD ENTRANCE, 54.2 FEET EAST-NORTHEAST OF A POWER POLE, 3.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1176.005	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941	
1176.080	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1176.172			1086.960	.009	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946	
1176.172			1086.960	.009	2011	GPS - STATIC	2013	HTERR	
1176.080	.131		1087.121	.066	1996	GPS - STATIC	2012	HTERR	

Geoid Separations(ft): GEOID18 = -89.153 12B = -89.140 09 = -89.019 03 = -88.960

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 46 43.92427	95 51 32.46444	624823.676	202543.705	.010		ADJUSTMENT	2013	GPS2946
47 46 43.92427	95 51 32.46444	624823.676	202543.705	.010	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 46 43.92381	95 51 32.46532	624823.616	202543.658	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
1946495.027	806642.547	937756.776	17374248.425	.010		ADJUSTMENT	2013	GPS2946
1946495.027	806642.547	937756.776	17374248.425	.010	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
1946494.965	806642.503	937756.714	17374248.381	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_J-DO6432-3W-15JUL2010.jpg	W	Jul 15, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_J-DO6432-2-15JUL2010.jpg		Jul 15, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_J-DO6432-1-15JUL2010.jpg		Jul 15, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 K

NGS Name: 6305 K

County: RED LAKE, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	24	150 N	41 W	474813.54	955130.11	2	C

NGS ACRN: [DO6430](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 13 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: 6305 K 2010

2.5 MILES SOUTH OF OKLEE, 1.05 MILES SOUTH ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222 (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), AT TRUNK HIGHWAY 92 MILEPOINT 20.60, 51.7 FEET EAST OF TRUNK HIGHWAY 92, 76.7 FEET NORTH-NORTHWEST OF A POWER POLE, 13.1 FEET SOUTH OF A FIELD ENTRANCE, 245.2 FEET SOUTH OF 250TH STREET SOUTHEAST, 3.9 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1162.225	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1162.314	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1162.383	.262		1073.184	.197	2011	GPS - OPUS	2022 GPSBM
1162.324	.262		1073.124	.197	2011	GPS - RTRN	2021 RTRN2021
1162.425			1073.170	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1162.425			1073.170	.009	2011	GPS - STATIC	2013 HTERR
1162.301	.131		1073.318	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -89.199 12B = -89.186 09 = -89.068 03 = -88.996

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 48 13.53971	95 51 30.10658	624924.999	211625.552	.131	3	GPS - OPUS	2022	GPSBM
47 48 13.53882	95 51 30.10544	624925.077	211625.463	.131	3	GPS - RTRN	2021	RTRN2021
47 48 13.53985	95 51 30.10603	624925.036	211625.567	.013		ADJUSTMENT	2013	GPS2946
47 48 13.53985	95 51 30.10603	624925.036	211625.567	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 48 13.53940	95 51 30.10682	624924.982	211625.521	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1946979.883	815710.765	938253.386	17383318.373	.131	3	GPS - OPUS	2022	GPSBM
1946979.958	815710.672	938253.460	17383318.280	.131	3	GPS - RTRN	2021	RTRN2021
1946979.921	815710.777	938253.424	17383318.386	.013		ADJUSTMENT	2013	GPS2946
1946979.921	815710.777	938253.424	17383318.386	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1946979.866	815710.734	938253.368	17383318.342	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_K-DO6430-3E-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_K-DO6430-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_K-DO6430-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
E	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 6305 L

NGS Name: 6305 L

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO6425 NGS Quad / Sta Num : 47095443/ USGS Quad: OKLEE SW	Get Map
NW	15	150 N	41 W	474907.22	955406.27	2	C		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) Stamping: 6305 L 2010

2.5 MILES SOUTHWEST OF OKLEE, 2.0 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222 IN OKLEE, AT TRUNK HIGHWAY 92 MILEPOINT 17.55, 58.3 FEET SOUTH OF TRUNK HIGHWAY 92, 18.2 FEET EAST OF A FIELD ENTRANCE, 43.5 FEET NORTHWEST OF A GUYED POWER POLE, 17.4 FEET SOUTH OF A CULVERT, 2.3 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1152.255	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1152.360	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1152.498	.262		1063.308	.197	2011	GPS - OPUS	2022	GPSBM
1152.343	.262		1063.157	.197	2011	GPS - RTRN	2021	RTRN2021
1152.458			1063.230	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1152.458			1063.230	.010	2011	GPS - STATIC	2013	HTERR
1152.360	.131		1063.384	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.186 12B = -89.160 09 = -89.052 03 = -88.976

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 07.22431	95 54 06.26774	614231.444	216998.364	.131	3	GPS - OPUS
47 49 07.22506	95 54 06.26700	614231.494	216998.440	.131	3	GPS - RTRN
47 49 07.22457	95 54 06.26742	614231.465	216998.390	.010		ADJUSTMENT
47 49 07.22457	95 54 06.26742	614231.465	216998.390	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 07.22430	95 54 06.26814	614231.417	216998.363	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1936524.297	821529.764	927802.532	17389152.460	.131	3	GPS - OPUS
1936524.350	821529.839	927802.585	17389152.534	.131	3	GPS - RTRN
1936524.320	821529.790	927802.555	17389152.486	.010		ADJUSTMENT
1936524.320	821529.790	927802.555	17389152.486	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1936524.270	821529.764	927802.505	17389152.460	.033	C	GPS - STATIC



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_L-DO6425-3S-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_L-DO6425-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_L-DO6425-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 6305 M

NGS Name: 6305 M

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6424](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	16	150 N	41 W	474906.86	955524.81	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2010	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010)

Stamping: 6305 M 2010

3.5 MILES EAST OF BROOKS, 3.6 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 16.55, 96.7 FEET SOUTH OF TRUNK HIGHWAY 92, 81.0 FEET EAST-SOUTHEAST OF A GUYED POWER POLE, 9.9 FEET NORTH OF A FIELD ENTRANCE, 18.7 FEET EAST OF 260TH AVENUE SOUTHEAST, 5.4 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference			
1151.061	.016	2/1				VERTICAL ADJUSTMENT			2019	00000941			
1151.169	.016	2/1				VERTICAL CONTROL SURVEY			2012	VTERR			

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference			
1151.231			1062.042	.008	2011	HORIZONTAL ADJUSTMENT			2013	GPS2946			
1151.231			1062.042	.008	2011	GPS - STATIC			2013	HTERR			
1151.179	.131		1062.226	.066	1996	GPS - STATIC			2012	HTERR			

Geoid Separations(ft): GEOID18 = -89.150 12B = -89.114 09 = -89.002 03 = -88.947

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference		
47 49 06.85525	95 55 24.81206	608871.105	216929.478	.010		ADJUSTMENT	2013	GPS2946		
47 49 06.85525	95 55 24.81206	608871.105	216929.478	.010	C	GPS - STATIC	2013	HTERR		

NAD83(1996)		Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference		
47 49 06.85489	95 55 24.81292	608871.047	216929.441	.033	C	GPS - STATIC	2012	HTERR		

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference		
1931166.567	821687.382	922443.504	17389317.080	.010		ADJUSTMENT	2013	GPS2946		
1931166.567	821687.382	922443.504	17389317.080	.010	C	GPS - STATIC	2013	HTERR		

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference		
1931166.507	821687.347	922443.444	17389317.046	.033	C	GPS - STATIC	2012	HTERR		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_M-DO6424-3E-14JUL2010.jpg	E	Jul 14, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_M-DO6424-2-14JUL2010.jpg		Jul 14, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_M-DO6424-1-14JUL2010.jpg		Jul 14, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 N

NGS Name: 6305 N

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6423](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	12	150 N	42 W	474907.43	955801.75	2	C	2010	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) Stamping: 6305 N 2010

1.5 MILES EAST OF BROOKS, 1.5 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY MILEPOINT 14.50, 25.6 FEET NORTH OF TRUNK HIGHWAY 92, 16.4 FEET WEST OF A FIELD ENTRANCE, 193.0 FEET WEST OF 240TH AVENUE SOUTHEAST, 111.6 FEET NORTH-NORTHWEST OF A GUYED POWER POLE, 3.3 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
1133.784	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941		
1133.899	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>		
1133.948	.262		1044.896	.197	2011	GPS - OPUS	2022	GPSBM		
1133.899	.262		1044.847	.197	2011	GPS - RTRN	2021	RTRN2021		
1133.918			1044.840	.007	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946		
1133.918			1044.840	.007	2011	GPS - STATIC	2013	HTERR		
1133.889	.131		1045.041	.066	1996	GPS - STATIC	2012	HTERR		
1133.840	.262		1044.968	.197	2007	GPS - RTRN	2012	RTRN2012		

Geoid Separations(ft): GEOID18 = -89.052 12B = -88.999 09 = -88.871 03 = -88.855

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 49 07.42789	95 58 01.75321	598159.719	216929.119	.131	3	GPS - OPUS	2022	GPSBM
47 49 07.42874	95 58 01.75252	598159.766	216929.205	.131	3	GPS - RTRN	2021	RTRN2021
47 49 07.42855	95 58 01.75308	598159.728	216929.186	.010		ADJUSTMENT	2013	GPS2946
47 49 07.42855	95 58 01.75308	598159.728	216929.186	.010	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>Red Lake County</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 49 07.42930	95 58 01.75417	598159.653	216929.261	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 49 07.42805	95 58 01.75394	598159.669	216929.134	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1920466.193	822139.495	911740.574	17389783.229	.131	3	GPS - OPUS	2022	GPSBM
1920466.243	822139.579	911740.625	17389783.313	.131	3	GPS - RTRN	2021	RTRN2021
1920466.204	822139.561	911740.586	17389783.295	.010		ADJUSTMENT	2013	GPS2946
1920466.204	822139.561	911740.586	17389783.295	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1920466.132	822139.640	911740.514	17389783.374	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1920466.143	822139.513	911740.525	17389783.247	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_N-DO6423-3N-20OCT2021.jpg	N	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_N-DO6423-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_N-DO6423-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 P

NGS Name: 6305 P

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6422](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	12	150 N	42 W	474907.77	955827.09	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2012	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (2011)

Stamping: 6305 P 2010

1.2 MILES EAST OF BROOKS, IN THE HEADWALL OF A BOX CULVERT IN THE SOUTHEAST CORNER OF A DRIVEWAY BOX CULVERT OVER THE HILL RIVER, 1.2 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 14.20, 22.9 FEET EAST OF DRIVEWAY FIRE NUMBER 23636, 69.9 FEET NORTH OF TRUNK HIGHWAY 92.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1123.987	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1124.105	.016	2/1					VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1123.987	.262			1035.132	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -89.032 12B = -88.979 09 = -88.855 03 = -88.838

Lat/Lon and County Coordinates (Feet)

NAD83(2007)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 07.77319	95 58 27.09447	596430.026	216955.248	.131	3	GPS - RTRN	2012	RTRN2012

State Plane and UTM Coordinates (Feet)

NAD83(2007)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1918739.384	822238.663	910013.370	17389884.671	.131	3	GPS - RTRN	2012	RTRN2012

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_P-DO6422-3N-28JUN2010.jpg	N	Jun 28, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_P-DO6422-2-28JUN2010.jpg		Jun 28, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_P-DO6422-1-28JUN2010.jpg		Jun 28, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6305 Q

NGS Name: 6305 Q

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6421](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	12	150 N	42 W	474907.86	955917.23	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) Stamping: 6305 Q 2010

0.5 MILE EAST OF BROOKS, 0.5 MILE EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 13.50, 88.6 FEET NORTH OF TRUNK HIGHWAY 92, 47.0 FEET WEST OF A GUYED POWER POLE, 22.5 FEET EAST OF COUNTY ROAD 130 (230TH AVENUE SOUTHEAST), 14.7 FEET SOUTH OF A FIELD ENTRANCE, 6.2 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1128.548	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941	
1128.672	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN	
1128.672	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1128.630	.262		1039.634	.197	2011	GPS - OPUS	2022	GPSBM	
1128.610	.262		1039.614	.197	2011	GPS - RTRN	2021	RTRN2021	
1128.692			1039.667	.007	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946	
1128.692			1039.667	.007	2011	GPS - STATIC	2013	HTERR	
1128.672	.131		1039.867	.066	1996	GPS - STATIC	2012	HTERR	
1128.587	.262		1039.765	.197	2007	GPS - RTRN	2012	RTRN2012	

Geoid Separations(ft): GEOID18 = -88.996 12B = -88.943 09 = -88.822 03 = -88.806

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 49 07.86216	95 59 17.23042	593008.259	216947.196	.131	3	GPS - OPUS	2022	GPSBM
47 49 07.86180	95 59 17.22989	593008.295	216947.160	.131	3	GPS - RTRN	2021	RTRN2021
47 49 07.86258	95 59 17.22995	593008.291	216947.239	.010		ADJUSTMENT	2013	GPS2946
47 49 07.86258	95 59 17.22995	593008.291	216947.239	.010	C	GPS - STATIC	2013	HTERR

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 49 07.86204	95 59 17.23100	593008.219	216947.184	.131	3	GPS - RTRN	2012	RTRN2012

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 49 07.86203	95 59 17.23090	593008.226	216947.183	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1915320.799	822375.163	906593.909	17390025.656	.131	3	GPS - OPUS	2022	GPSBM
1915320.834	822375.125	906593.944	17390025.618	.131	3	GPS - RTRN	2021	RTRN2021
1915320.833	822375.204	906593.943	17390025.697	.010		ADJUSTMENT	2013	GPS2946
1915320.833	822375.204	906593.943	17390025.697	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1915320.759	822375.152	906593.869	17390025.645	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1915320.766	822375.151	906593.876	17390025.644	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_Q-DO6421-3E-20OCT2021.jpg	E	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_Q-DO6421-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6305_Q-DO6421-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6306 A

NGS Name: 6306 A

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO6426	Get Map
SW	12	150 N	41 W	474911.73	955129.80	2	C	NGS Quad / Sta Num : 47095442/ USGS Quad: OKLEE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 12 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010)

Stamping: 6306 A 2010

1.5 MILES SOUTH OF OKLEE, AT THE JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 5 (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), AT TRUNK HIGHWAY 222 MILEPOINT 0.05, 23.7 FEET EAST OF COUNTY ROAD 5, 15.0 FEET NORTH OF A FIELD APPROACH, 101.5 FEET NORTHEAST OF A POWER POLE, 4.0 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1156.310	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1156.408	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1156.468	.262		1067.199	.197	2011	GPS - OPUS	2022	GPSBM
1156.441	.262		1067.173	.197	2011	GPS - RTRN	2021	RTRN2021
1156.513			1067.193	.009	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1156.513			1067.193	.009	2011	GPS - STATIC	2013	HTERR
1156.395	.131		1067.347	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.265 12B = -89.252 09 = -89.140 03 = -89.065

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 11.72881	95 51 29.79968	624907.166	217522.048	.131	3	GPS - OPUS
47 49 11.72929	95 51 29.79939	624907.186	217522.097	.131	3	GPS - RTRN
47 49 11.72883	95 51 29.79944	624907.182	217522.050	.010		ADJUSTMENT
47 49 11.72883	95 51 29.79944	624907.182	217522.050	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 11.72845	95 51 29.80026	624907.127	217522.011	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1947211.150	821601.943	938492.337	17389210.778	.131	3	GPS - OPUS
1947211.172	821601.991	938492.359	17389210.826	.131	3	GPS - RTRN
1947211.167	821601.945	938492.354	17389210.779	.010		ADJUSTMENT
1947211.167	821601.945	938492.354	17389210.779	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1947211.110	821601.908	938492.296	17389210.743	.033	C	GPS - STATIC



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_A-DO6426-3E-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_A-DO6426-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_A-DO6426-1-20OCT2021.jpg

<u>Dir</u>	<u>Date</u>
E	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6306 B

NGS Name: 6306 B

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6427](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	11	150 N	41 W	475000.43	955130.47	2	C	2010	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011) Stamping: 6306 B 2010

IN OKLEE, 0.45 MILE SOUTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF TRUNK HIGHWAY 222 AND 1ST AVENUE IN OKLEE, 45.3 FEET WEST OF COUNTY ROAD 5, 55.2 FEET SOUTH OF 230TH STREET SOUTHEAST, 90.1 FEET SOUTH-SOUTHEAST OF A LIGHT POLE, 28.0 FEET NORTH-NORTHEAST OF A POWER POLE, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1154.561	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1154.660	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1154.765	.262		1065.418	.197	2011	GPS - OPUS	2022	GPSBM
1154.673	.262		1065.329	.197	2011	GPS - RTRN	2021	RTRN2021
1154.755			1065.369	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1154.755			1065.369	.011	2011	GPS - STATIC	2013	HTERR
1154.656	.131		1065.520	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.347 12B = -89.317 09 = -89.212 03 = -89.140

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 50 00.42716	95 51 30.47465	624828.655	222456.408	.131	3	GPS - OPUS
47 50 00.42737	95 51 30.47350	624828.733	222456.430	.131	3	GPS - RTRN
47 50 00.42754	95 51 30.47419	624828.686	222456.447	.010		ADJUSTMENT
47 50 00.42754	95 51 30.47419	624828.686	222456.447	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 50 00.42714	95 51 30.47502	624828.630	222456.406	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1947341.158	826534.540	938628.805	17394144.482	.131	3	GPS - OPUS
1947341.238	826534.559	938628.885	17394144.500	.131	3	GPS - RTRN
1947341.191	826534.578	938628.838	17394144.519	.010		ADJUSTMENT
1947341.191	826534.578	938628.838	17394144.519	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1947341.133	826534.539	938628.780	17394144.481	.033	C	GPS - STATIC



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_B-DO6427-3W-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_B-DO6427-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_B-DO6427-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 6306 B 1

NGS Name: 6306 B 1

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO6428 NGS Quad / Sta Num : 47095442/ USGS Quad: OKLEE	Get Map
NW	1	150 N	41 W	475037.70	955130.70	2			

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2010	GOOD	Horz=NO Vert=YES	YES	63502	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	SURVEY DISK	USACE

Description: (2010)

Stamping: 6306 B 1 2010

0.5 MILE NORTH OF OKLEE, IN A BRIDGE ABUTMENT IN THE SOUTHEAST CORNER OF COUNTY ROAD 5 BRIDGE NUMBER 63502 OVER THE LOST RIVER, 0.25 MILE NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND 1ST AVENUE IN OKLEE, 18.4 FEET EAST OF COUNTY ROAD 5.

Station Notes

THE DISK WAS SET IN THE BRIDGE WHEN BUILT IN 1964 THEN STAMPED IN 2010 WHEN FIRST USED.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1148.164	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1148.256	.016	2/1					VERTICAL CONTROL SURVEY	2012	VTERR

Geoid Separations(ft): GEOID18 = -89.413 12B = -89.370 09 = -89.275 03 = -89.209

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_B_1-DO6428-3E-29JUN2010.jpg	E	Jun 29, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_B_1-DO6428-2-29JUN2010.jpg		Jun 29, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/6306_B_1-DO6428-1-29JUN2010.jpg		Jun 29, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 7 KEE

NGS Name: 7 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8547](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	14	151 N	43 W	475419.70	960707.11		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2021)

Stamping: 7 KEE 1963

3.7 MILES WEST OF PLUMMER, 2.5 MILES WEST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND TRUNK HIGHWAY 59 IN PLUMMER, THEN 1.1 MILES WEST ON COUNTY ROAD 23, 46.9 FEET SOUTH OF COUNTY ROAD 23 (180TH STREET), 44.6 FEET WEST OF COUNTY ROAD 24 (170TH AVENUE SOUTHEAST), 1.9 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1106.697	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1107.865	.262		1018.689	.197	2011	GPS - OPUS	2022	GPSBM
1107.803	.262		1018.627	.197	2011	GPS - OPUS	2022	GPSBM
1107.757	.262		1018.577	.197	2011	GPS - RTRN	2021	RTRN2021
1107.780			1018.623	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1107.780			1018.623	.018	2011	GPS - STATIC	2013	HTERR
1107.806	.131		1018.771	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.180 12B = -89.062 09 = -89.019 03 = -89.032

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 54 19.70302	96 07 07.10659	560838.209	248417.147	.131	3	GPS - OPUS	2022	GPSBM
47 54 19.70291	96 07 07.10677	560838.197	248417.136	.131	3	GPS - OPUS	2022	GPSBM
47 54 19.70370	96 07 07.10685	560838.192	248417.216	.131	3	GPS - RTRN	2021	RTRN2021
47 54 19.70350	96 07 07.10599	560838.250	248417.196	.013		ADJUSTMENT	2013	GPS2946
47 54 19.70350	96 07 07.10599	560838.250	248417.196	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 54 19.70318	96 07 07.10695	560838.185	248417.164	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1884513.220	855171.647	875819.500	17422874.108	.131	3	GPS - OPUS	2022	GPSBM
1884513.207	855171.636	875819.487	17422874.097	.131	3	GPS - OPUS	2022	GPSBM
1884513.205	855171.716	875819.485	17422874.177	.131	3	GPS - RTRN	2021	RTRN2021
1884513.262	855171.694	875819.543	17422874.155	.013		ADJUSTMENT	2013	GPS2946
1884513.262	855171.694	875819.543	17422874.155	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1884513.196	855171.664	875819.476	17422874.125	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/7_KEE-DO8547-3S-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/7_KEE-DO8547-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/7_KEE-DO8547-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: 8 KEE

NGS Name: 8 KEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	153 N	43 W	475656.00	960710.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963) **Stamping:** 8 KEE 1963

2.6 MILES NORTH AND 3.5 MILES WEST OF PLUMMER, 0.4 MILE SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 2.5 MILES WEST ALONG COUNTY ROAD 1, THEN 1.1 MILES WEST ALONG COUNTY HIGHWAY 32, THEN 3.0 MILES NORTH ALONG COUNTY HIGHWAY 24 (SOUTHEAST 170TH AVENUE), THEN 146.0 FEET WEST ALONG COUNTY HIGHWAY 26, 36.0 FEET NORTH AND 275.0 FEET WEST OF COUNTY ROAD 26 AND COUNTY ROAD 24 (TOWNSHIP ROAD) (CROSSROADS), 3.0 FEET SOUTHEAST OF A POWER POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1105.487	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.199 12B = -89.084 09 = -89.042 03 = -89.068

* No Horizontal Positions in the Database *



Mn/DOT Name: 984

NGS Name: 984

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0008](#)

[Get Map](#)

NGS Quad / Sta Num : 47096141/

USGS Quad: RED LAKE FALLS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	14	151 N	44 W	475340.00	961549.00	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1940	2019	GOOD	Horz=YES Vert=YES	YES		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	PIPE CAP	USGS

Description: (2008)

Stamping: 984

AT THE NORTH EDGE OF RED LAKE FALLS, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.3 MILE EAST-SOUTHEAST ALONG BRIDGE STREET NORTHEAST, THEN 0.3 MILE NORTH ALONG COUNTY ROAD 13 (BROADWAY AVENUE NORTHEAST), THEN 489.0 FEET EAST AND NORTH ALONG 9TH STREET NORTHEAST, THEN 190.0 FEET EAST ALONG 10TH STREET NORTHEAST, THEN 0.2 MILE EAST-NORTHEAST ALONG HAMILTON AVENUE NORTHEAST, THEN 436.0 FEET NORTH ALONG STEVENS AVENUE NORTHEAST, THEN 118.0 FEET WEST ALONG STUDEBAKER LANE, 0.3 MILE EAST OF TRUNK HIGHWAY 13 ON A BIKE PATH, 19.0 FEET NORTH OF THE BITUMINOUS EDGE OF A BIKE PATH, 2.3 FEET EAST OF A WITNESS POST.

Station Notes

THIS STATION IS ALSO NAMED K=984 USGS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
983.269	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
983.387	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32
983.430	.033	3				VERTICAL CONTROL SURVEY	1991	POSTED

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
982.180	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
982.180	.033	3				VERTICAL CONTROL SURVEY	1979	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
983.262	.262		894.106	.197	2011	GPS - RTRN	2019	RTRN2019

Geoid Separations(ft): GEOID18 = -89.157 12B = -89.029 09 = -89.009 03 = -89.048

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 53 39.52625	96 15 50.14343	525206.005	244264.982	.131	3	GPS - RTRN	2019	RTRN2019

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1848742.296	852528.926	840030.870	17420278.836	.131	3	GPS - RTRN	2019	RTRN2019

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/984-SL0008-3N-09OCT2019.jpg	N	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/984-SL0008-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/984-SL0008-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: AKEA

NGS Name: AKEA

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DN8399 NGS Quad / Sta Num : 47096142/ USGS Quad: MARCOUX CORNERS	Get Map
NW	26	151 N	44 W	475226.93	961600.91	2	C		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010)

Stamping: AKEA 2010

IN RED LAKE FALLS, 0.35 MILE SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF COUNTY ROAD 11 AND TRUNK HIGHWAY 32 IN RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 85.0, 31.6 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 32, 60.9 FEET NORTHEAST OF A DRIVEWAY, 14.3 FEET NORTH OF TRUNK HIGHWAY 32 MILEPOST 85.0, 14.3 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1039.545	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1039.352	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1039.424	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1039.545	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1039.558	.262		950.467	.197	2011	GPS - OPUS	2022	GPSBM
1039.437	.262		950.346	.197	2011	GPS - RTRN	2021	RTRN2021
1039.437	.262		950.349	.197	2011	GPS - RTRN	2019	RTRN2019
1039.545			950.457	.012	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1039.545			950.457	.012	2011	GPS - STATIC	2013	HTERR
1039.532	.131		950.572	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.091 12B = -88.986 09 = -88.950 03 = -88.973

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 52 26.93276	96 16 00.91484	524481.419	236907.805	.131	3	GPS - OPUS
47 52 26.93338	96 16 00.91378	524481.491	236907.868	.131	3	GPS - RTRN
47 52 26.93173	96 16 00.91164	524481.637	236907.701	.131	3	GPS - RTRN
47 52 26.93287	96 16 00.91361	524481.503	236907.816	.013		ADJUSTMENT
47 52 26.93287	96 16 00.91361	524481.503	236907.816	.013	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 52 26.93244	96 16 00.91444	524481.446	236907.772	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1847707.676	845209.929	838985.944	17412958.099	.131	3	GPS - OPUS	2022	GPSBM
1847707.751	845209.989	838986.019	17412958.158	.131	3	GPS - RTRN	2021	RTRN2021
1847707.890	845209.816	838986.157	17412957.985	.131	3	GPS - RTRN	2019	RTRN2019
1847707.761	845209.937	838986.028	17412958.106	.013		ADJUSTMENT	2013	GPS2946
1847707.761	845209.937	838986.028	17412958.106	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1847707.702	845209.896	838985.970	17412958.065	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/AKEA-DN8399-3E-20OCT2021.jpg	E	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/AKEA-DN8399-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/AKEA-DN8399-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ART E

NGS Name: ART E

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8548](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	31	152 N	42 W	475605.52	960550.82		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	SURVEY DISK	MN-125

Description: (2008) Stamping: ART E 2008

2.6 MILES NORTHWEST OF PLUMMER, 2.2 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, THEN 2.1 MILES WEST ON 160TH STREET SOUTHEAST, 70.5 FEET NORTH OF A CORRUGATED METAL PIPE, 39.0 FEET EAST OF 180TH AVENUE SOUTHEAST, 31.7 FEET NORTH OF 160TH STREET SOUTHEAST, 1.0 FOOT SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1114.463	.262		1025.241	.197	2011	GPS - OPUS	2022	GPSBM
1114.411	.262		1025.188	.197	2011	GPS - OPUS	2022	GPSBM
1114.214	.262		1024.988	.197	2011	GPS - RTRN	2021	RTRN2021
1114.450			1025.244	.019	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1114.450			1025.244	.019	2011	GPS - STATIC	2013	HTERR
1114.466	.131		1025.382	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.222 12B = -89.107 09 = -89.062 03 = -89.081

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 05.52314	96 05 50.82353	565998.463	259157.773	.131	3	GPS - OPUS	2022	GPSBM
47 56 05.52329	96 05 50.82328	565998.481	259157.788	.131	3	GPS - OPUS	2022	GPSBM
47 56 05.52314	96 05 50.82303	565998.498	259157.773	.131	3	GPS - RTRN	2021	RTRN2021
47 56 05.52315	96 05 50.82274	565998.517	259157.774	.016		ADJUSTMENT	2013	GPS2946
47 56 05.52315	96 05 50.82274	565998.517	259157.774	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 05.52293	96 05 50.82377	565998.447	259157.752	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>					
1890121.867	865683.238	881444.511	17433381.799	.131	3	GPS - OPUS	2022	GPSBM
1890121.885	865683.253	881444.529	17433381.813	.131	3	GPS - OPUS	2022	GPSBM
1890121.902	865683.237	881444.545	17433381.797	.131	3	GPS - RTRN	2021	RTRN2021
1890121.921	865683.237	881444.565	17433381.798	.016		ADJUSTMENT	2013	GPS2946
1890121.921	865683.237	881444.565	17433381.798	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>					
1890121.850	865683.218	881444.494	17433381.778	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ART_E-DO8548-3N-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ART_E-DO8548-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ART_E-DO8548-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: BADAS

NGS Name: BADAS

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6403](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	7	150 N	43 W	474955.78	961247.05	2	C	2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) Stamping: BADAS 2010

3.5 MILES WEST OF TERREBONNE, 3.5 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 2.50, 24.1 FEET SOUTH OF TRUNK HIGHWAY 92, 120.0 FEET SOUTH-SOUTHEAST OF A GUYED POWER POLE, 53.2 FEET NORTH-NORTHEAST OF A RIGHT-OF-WAY POST, 12.1 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1071.497	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1071.619	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1071.635	.262		982.757	.197	2011	GPS - OPUS	2022	GPSBM
1071.481	.262		982.603	.197	2011	GPS - RTRN	2021	RTRN2021
1071.586			982.705	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1071.586			982.705	.014	2011	GPS - STATIC	2013	HTERR
1071.619	.131		982.879	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.878 12B = -88.789 09 = -88.733 03 = -88.740

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 55.77949	96 12 47.05488	537728.671	221612.548	.131	3	GPS - OPUS
47 49 55.78015	96 12 47.05372	537728.750	221612.615	.131	3	GPS - RTRN
47 49 55.78013	96 12 47.05378	537728.746	221612.613	.016		ADJUSTMENT
47 49 55.78013	96 12 47.05378	537728.746	221612.613	.016	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 55.77970	96 12 47.05480	537728.676	221612.569	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1860295.193	829370.829	851557.716	17397095.681	.131	3	GPS - OPUS
1860295.274	829370.893	851557.798	17397095.744	.131	3	GPS - RTRN
1860295.271	829370.891	851557.793	17397095.742	.016		ADJUSTMENT
1860295.271	829370.891	851557.793	17397095.742	.016	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1860295.199	829370.850	851557.722	17397095.702	.033	C	GPS - STATIC



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BADAS-DO6403-3S-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BADAS-DO6403-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BADAS-DO6403-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: BAKUP

NGS Name: BAKUP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8409](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	23	150 N	44 W	474727.11	961559.53	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2003	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	SURVEY DISK	MNDT

Description: (2008)

Stamping: BAKUP 2003

2.35 MILES NORTH OF MARCOUX, 2.35 MILES NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2 IN MARCOUX, AT TRUNK HIGHWAY 32 MILEPOINT 79.30, 86.1 FEET EAST OF TRUNK HIGHWAY 32, 78.7 FEET NORTH-NORTHWEST OF A POWER POLE, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1083.748	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1083.502	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1083.623	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1083.748	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1083.636	.262		995.014	.197	2011	GPS - RTRN	2019	RTRN2019
1083.748			995.106	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1083.748			995.106	.014	2011	GPS - STATIC	2013	HTERR
1083.758	.131		995.254	.066	1996	GPS - STATIC	2012	HTERR
1083.725	.262		995.231	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.622 12B = -88.560 09 = -88.500 03 = -88.494

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 47 27.11264	96 15 59.53059	524615.152	206526.123	.131	3	GPS - RTRN	2019	RTRN2019
47 47 27.10993	96 15 59.52991	524615.199	206525.848	.016		ADJUSTMENT	2013	GPS2946
47 47 27.10993	96 15 59.52991	524615.199	206525.848	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 47 27.10942	96 15 59.53090	524615.132	206525.797	.033	C	GPS - STATIC	2012	HTERR
47 47 27.10980	96 15 59.53136	524615.100	206525.835	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1846557.897	814853.874	837795.808	17382590.480	.131	3	GPS - RTRN	2019	RTRN2019
1846557.932	814853.598	837795.843	17382590.204	.016		ADJUSTMENT	2013	GPS2946
1846557.932	814853.598	837795.843	17382590.204	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1846557.863	814853.549	837795.773	17382590.155	.033	C	GPS - STATIC	2012	HTERR
1846557.833	814853.589	837795.743	17382590.194	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BAKUP-DN8409-3E-01OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BAKUP-DN8409-2-01OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BAKUP-DN8409-1-01OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
E	Oct 1, 2019
	Oct 1, 2019
	Oct 1, 2019



Mn/DOT Name: BARTLEY MNDT

NGS Name: BARTLEY

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DH7976](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	30	150 N	41 W	474631.20	955646.61	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2003	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 7 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2008)

Stamping: BARTLEY 2003

3.5 MILES SOUTHEAST OF BROOKS, 3.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS TO TRUNK HIGHWAY 59 MILEPOINT 331.65, THEN 2.45 MILES EAST ON COUNTY ROAD 7, 61.2 FEET NORTH OF COUNTY ROAD 7, 17.0 FEET EAST OF A FIELD ENTRANCE, 6.0 FEET NORTH-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1167.150	.016	2/1				VERTICAL ADJUSTMENT	2006	0000425-9	
1167.127	.016	2/1				VERTICAL CONTROL SURVEY	2005	VLAMB	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1167.163	.262		1078.157	.197	2011	GPS - OPUS	2020	GPSBM	
1166.933	.262		1078.013	.197	2011	GPS - RTRN	2020	RTRN2020	
1167.150			1078.105	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946	
1167.150			1078.105	.010	2011	GPS - STATIC	2013	HTERR	
1167.124	.131		1078.289	.066	1996	GPS - STATIC	2012	HTERR	

Geoid Separations(ft): GEOID18 = -89.006 12B = -88.920 09 = -88.783 03 = -88.842

Lat/Lon and County Coordinates (Feet)

Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 46 31.19830	95 56 46.60811	603374.395	201125.354	.131	3	GPS - OPUS	2020	GPSBM
47 46 31.19809	95 56 46.60748	603374.438	201125.333	.131	3	GPS - RTRN	2020	RTRN2020
47 46 31.19893	95 56 46.60758	603374.431	201125.419	.010		ADJUSTMENT	2013	GPS2946
47 46 31.19893	95 56 46.60758	603374.431	201125.419	.010	C	GPS - STATIC	2013	HTERR

Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 46 31.19839	95 56 46.60847	603374.371	201125.363	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
1925007.915	806131.722	916263.062	17373764.834	.131	3	GPS - OPUS	2020	GPSBM
1925007.957	806131.699	916263.104	17373764.811	.131	3	GPS - RTRN	2020	RTRN2020
1925007.954	806131.785	916263.101	17373764.896	.010		ADJUSTMENT	2013	GPS2946
1925007.954	806131.785	916263.101	17373764.896	.010	C	GPS - STATIC	2013	HTERR

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
1925007.891	806131.732	916263.038	17373764.844	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BARTLEY-DH7976-3N-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BARTLEY-DH7976-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BARTLEY-DH7976-1-16JUN2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020



Mn/DOT Name: BEAU

NGS Name: BEAU

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6404](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	8	150 N	43 W	474955.35	961208.09	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 13 FT)	SURVEY DISK	MNDT

Description: (2011) **Stamping:** BEAU 2008

3.5 MILES SOUTHEAST OF RED LAKE FALLS, 3.3 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, THEN 3.0 MILES WEST ON TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 92 MILEPOST 3.00, 71.9 FEET SOUTH OF TRUNK HIGHWAY 92, 39.3 FEET EAST OF 130TH AVENUE SOUTHEAST, 3.8 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1071.149	.016	2/1				VERTICAL ADJUSTMENT			2019	00000941		
1071.271	.016	2/1				VERTICAL CONTROL SURVEY			2012	VTERR		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1071.245	.262		982.370	.197	2011	GPS - OPUS			2022	GPSBM		
1071.077	.262		982.203	.197	2011	GPS - RTRN			2021	RTRN2021		
1071.251			982.377	.014	2011	HORIZONTAL ADJUSTMENT			2013	GPS2946		
1071.251			982.377	.014	2011	GPS - STATIC			2013	HTERR		
1071.258	.131		982.537	.066	1996	GPS - STATIC			2012	HTERR		

Geoid Separations(ft): GEOID18 = -88.874 12B = -88.783 09 = -88.727 03 = -88.733

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		Red Lake County		X		Y		Acc	Order	Determination Method	Project Info	
Latitude	Longitude											Year	Reference	
47 49 55.34728	96 12 08.08870	540387.509	221574.220	.131	3	GPS - OPUS			2022	GPSBM				
47 49 55.34700	96 12 08.08868	540387.510	221574.192	.131	3	GPS - RTRN			2021	RTRN2021				
47 49 55.34728	96 12 08.08766	540387.580	221574.220	.016		ADJUSTMENT			2013	GPS2946				
47 49 55.34728	96 12 08.08766	540387.580	221574.220	.016	C	GPS - STATIC			2013	HTERR				

NAD83(1996)		Geodetic Position		Red Lake County		X		Y		Acc	Order	Determination Method	Project Info	
Latitude	Longitude											Year	Reference	
47 49 55.34686	96 12 08.08864	540387.513	221574.178	.033	C	GPS - STATIC			2012	HTERR				

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		X		Y		Acc	Order	Determination Method	Project Info	
												Year	Reference	
		1862949.675	829220.227	854213.074	17396941.536	.131	3	GPS - OPUS			2022	GPSBM		
		1862949.675	829220.199	854213.074	17396941.507	.131	3	GPS - RTRN			2021	RTRN2021		
		1862949.746	829220.224	854213.145	17396941.533	.016		ADJUSTMENT			2013	GPS2946		
		1862949.746	829220.224	854213.145	17396941.533	.016	C	GPS - STATIC			2013	HTERR		

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15		X		Y		Acc	Order	Determination Method	Project Info	
												Year	Reference	
		1862949.677	829220.185	854213.076	17396941.493	.033	C	GPS - STATIC			2012	HTERR		



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BEAU-DO6404-3S-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BEAU-DO6404-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BEAU-DO6404-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: BONNE

NGS Name: BONNE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6412](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	7	150 N	42 W	474938.85	960435.83	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2010	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011) Stamping: BONNE 2008

2.5 MILES EAST OF TERREBONNE, 2.5 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 NORTH IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 9.00, 58.8 FEET SOUTHWEST OF TRUNK HIGHWAY 92, 20.5 FEET NORTHWEST OF A FIELD ENTRANCE, 3.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1108.699	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1108.833	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1108.843			1019.959	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1108.843			1019.959	.010	2011	GPS - STATIC	2013	HTERR
1108.823	.131		1020.132	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.868 12B = -88.799 09 = -88.717 03 = -88.701

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 38.85486	96 04 35.82857	571252.446	219993.721	.013		ADJUSTMENT	2013	GPS2946
47 49 38.85486	96 04 35.82857	571252.446	219993.721	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 38.85443	96 04 35.82953	571252.381	219993.677	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1893716.075	826337.562	884987.231	17394017.515	.013		ADJUSTMENT	2013	GPS2946
1893716.075	826337.562	884987.231	17394017.515	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1893716.008	826337.521	884987.164	17394017.474	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BONNE-DO6412-3S-29JUN2010.jpg	S	Jun 29, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BONNE-DO6412-2-29JUN2010.jpg		Jun 29, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BONNE-DO6412-1-29JUN2010.jpg		Jun 29, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BRO MNDT

NGS Name: BRO

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	14	150 N	42 W	474857.51	955955.55		2

NGS ACRN: [SK1097](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2018	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	TRAVERSE STATION DISK	MNDT

Description: (1977) Stamping: BRO 1977

IN BROOKS, 0.15 MILE SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, 15.0 FEET EAST OF TRUNK HIGHWAY 59, 131.0 FEET SOUTH OF THE WEST LEG OF A TRUNK HIGHWAY 59 AND A TRUNK HIGHWAY 92 SIGN, 75.72 FEET WEST-SOUTHWEST OF A MINNESOTA DEPARTMENT OF TRANSPORTATION NAIL AND DISK IN A POWER POLE, 4.0 FEET EAST OF THE EAST EDGE OF A BITUMINOUS MAT.

Station Notes

FOUND THE IRON PIN BENT OVER.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.559	.197		1043.000	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1129.985						RECIPROCAL VERTICAL ANGLE	1977	HORZ

Geoid Separations(ft): GEOID18 = -88.953 12B = -88.901 09 = -88.789 03 = -88.770

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 48 57.51031	95 59 55.54698	590398.188	215885.593	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 48 57.50788	95 59 55.54175	590398.547	215885.349	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 48 57.64302	95 59 54.42190			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912668.572	821424.908	903939.616	17389078.549	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912668.919	821424.648	903939.963	17389078.289	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1288056.815	493350.724			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: BROO MNDT

NGS Name: BROO

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DF7289](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	14	150 N	42 W	474814.80	955959.03	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2002) Stamping: BROO 2002

1.0 MILE SOUTH OF BROOKS, 1.0 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 333.65, 69.2 FEET DIAMETER WEST OF TRUNK HIGHWAY 59, 18.5 FEET DIAMETER NORTH OF AN ENTRANCE, 10.7 FEET DIAMETER SOUTHEAST OF A RIGHT-OF-WAY POST, 1.3 FEET DIAMETER EAST OF A WITNESS POST.

Station Pair: POPLAR - RED LAKE, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.596	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1131.727	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.596			1042.787	.010	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1131.596	.131		1042.967	.066	1996	GPS - STATIC	2023	HERSK
1131.596			1042.787	.010	2011	GPS - STATIC	2023	HERSK
1131.723			1042.787	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1131.723			1042.790	.010	2011	GPS - STATIC	2013	HTERR
1131.691	.131		1042.967	.066	1996	GPS - STATIC	2012	HTERR
			1042.787	.009	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1131.599	.262		1042.872	.197	2007	GPS - RTRN	2012	RTRN2012
1131.901	.262		1043.167	.197	1996	GPS - RTRN	2008	RTRN2008
			1042.908	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1131.625	.131		1042.898	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1894
1131.625	.131		1042.898	.066	1996	GPS - STATIC	2003	HBAGL

Geoid Separations(ft): GEOID18 = -88.904 12B = -88.835 09 = -88.727 03 = -88.730

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 14.80460	95 59 59.02810	590181.137	211557.010	.007		ADJUSTMENT	2023	GPS3597
47 48 14.80460	95 59 59.02810	590181.137	211557.010	.007	C	GPS - STATIC	2023	HERSK
47 48 14.80460	95 59 59.02810	590181.137	211557.010	.010		ADJUSTMENT	2013	GPS2946
47 48 14.80488	95 59 59.02845	590181.113	211557.038	.010	C	GPS - STATIC	2013	HTERR
47 48 14.80460	95 59 59.02810	590181.137	211557.010	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 14.80472	95 59 59.02901	590181.075	211557.021	.131	3	GPS - RTRN	2012	RTRN2012
47 48 14.80454	95 59 59.02905	590181.072	211557.003	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 14.80426	95 59 59.02922	590181.061	211556.975	.033	C	GPS - STATIC	2023	HERSK
47 48 14.80426	95 59 59.02922	590181.061	211556.975	.033	C	GPS - STATIC	2012	HTERR
47 48 14.80491	95 59 59.02751	590181.177	211557.041	.131	3	GPS - RTRN	2008	RTRN2008
47 48 14.80426	95 59 59.02922	590181.061	211556.975	.033	C	ADJUSTMENT	2003	GPS1894
47 48 14.80426	95 59 59.02922	590181.061	211556.975	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912268.895	817109.949	903534.227	17384762.744	.007		ADJUSTMENT	2023	GPS3597
1912268.895	817109.949	903534.227	17384762.744	.007	C	GPS - STATIC	2023	HERSK
1912268.895	817109.949	903534.227	17384762.744	.010		ADJUSTMENT	2013	GPS2946
1912268.872	817109.978	903534.204	17384762.774	.010	C	GPS - STATIC	2013	HTERR
1912268.895	817109.949	903534.227	17384762.744	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912268.834	817109.963	903534.165	17384762.759	.131	3	GPS - RTRN	2012	RTRN2012
1912268.830	817109.945	903534.162	17384762.741	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912268.818	817109.917	903534.149	17384762.713	.033	C	GPS - STATIC	2023	HERSK
1912268.818	817109.917	903534.149	17384762.713	.033	C	GPS - STATIC	2012	HTERR
1912268.937	817109.979	903534.268	17384762.774	.131	3	GPS - RTRN	2008	RTRN2008
1912268.818	817109.917	903534.149	17384762.713	.033	C	ADJUSTMENT	2003	GPS1894
1912268.818	817109.917	903534.149	17384762.713	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROO-DF7289-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROO-DF7289-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROO-DF7289-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKS

NGS Name: BROOKS

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	14	150 N	42 W	474846.45	955955.63	2	C

NGS ACRN: SK0623	Get Map
NGS Quad / Sta Num : 47095443/1037	
USGS Quad: OKLEE SW	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2012	GOOD	Horz=NO Vert=NO	YES		RECESSED 12 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2008) **Stamping:** BROOKS 1964

IN THE EAST EDGE OF BROOKS, 0.4 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 334.25, 120.0 FEET WEST OF TRUNK HIGHWAY 59, 107.27 FEET NORTHEAST OF BROOKS RM 2, 95.44 FEET NORTH OF BROOKS RM 1, 55.0 FEET SOUTH OF A DRIVEWAY, 66.8 FEET NORTHEAST OF THE NORTHEAST CORNER OF A SHED, 48.9 FEET EAST OF THE SOUTHEAST CORNER OF A SHED, 95.45 FEET NORTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.766	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1131.894	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1131.828	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1130.631	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.828			1042.856	.008	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1131.828			1042.856	.008	2011	GPS - STATIC	2013	HTERR
1131.822	.131		1043.056	.066	1996	GPS - STATIC	2012	HTERR
1131.710	.262		1042.938	.197	2007	GPS - RTRN	2012	RTRN2012
1131.733	.262		1042.977	.197	1996	GPS - RTRN	2008	RTRN2008
1131.822	.197		1043.282	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -88.940 12B = -88.884 09 = -88.773 03 = -88.760

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 46.44546	95 59 55.63198	590397.723	214764.342	.010		ADJUSTMENT	2013	GPS2946
47 48 46.44546	95 59 55.63198	590397.723	214764.342	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 46.44541	95 59 55.63329	590397.634	214764.337	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 46.44476	95 59 55.63291	590397.660	214764.271	.033	C	GPS - STATIC	2012	HTERR
47 48 46.44517	95 59 55.63292	590397.659	214764.312	.131	3	GPS - RTRN	2008	RTRN2008
47 48 46.44432	95 59 55.63201	590397.722	214764.226	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 48 46.44190	95 59 55.62678	590398.080	214763.983	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 48 46.57753	95 59 54.50669			.100	2	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912620.743	820304.830	903890.319	17387958.180	.010		ADJUSTMENT	2013	GPS2946
1912620.743	820304.830	903890.319	17387958.180	.010	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912620.654	820304.829	903890.230	17387958.178	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912620.677	820304.762	903890.253	17387958.111	.033	C	GPS - STATIC	2012	HTERR
1912620.678	820304.803	903890.254	17387958.153	.131	3	GPS - RTRN	2008	RTRN2008
1912620.737	820304.715	903890.313	17387958.064	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1912621.084	820304.457	903890.660	17387957.805	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1288009.003	492230.583			.100	2	CLASSICAL SURVEY	1964	13522

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS-SK0623-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS-SK0623-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS-SK0623-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKS AZ MK

NGS Name: BROOKS AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO9983](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	14	150 N	42 W	474834.00	955957.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2012	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	AZIMUTH MARK DISK	NGS

Description: (1964)

Stamping:

IN BROOKS, 0.6 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, 150.0 FEET WEST OF TRUNK HIGHWAY 59.

Station Notes

THE TIES FALL IN A FIELD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.927 12B = -88.865 09 = -88.756 03 = -88.747



Mn/DOT Name: BROOKS RM 1

NGS Name: BROOKS RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0625](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	14	150 N	42 W	474845.51	955955.41	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2012	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 3 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2008) **Stamping:** BROOKS NO 1 1964

IN BROOKS, 0.4 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 334.25, 150.0 FEET WEST OF TRUNK HIGHWAY 59, 80.5 FEET SOUTHEAST OF THE NORTHEAST CORNER OF A SHED, 63.9 FEET EAST OF THE EAST WALL OF A SHED, 1.0 FOOT WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1132.134	.016	2/1					VERTICAL ADJUSTMENT		1991	00000025

NGVD29				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1130.936	.016	2					VERTICAL CONTROL SURVEY		1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1132.439				1043.397	.008	2011	HORIZONTAL ADJUSTMENT		2013	GPS2946
1132.439				1043.462	.008	2011	GPS - STATIC		2013	HTERR
1132.412	.131			1043.666	.066	1996	GPS - STATIC		2012	HTERR
				1043.397	.008	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
1132.127	.262			1043.371	.197	1996	GPS - RTRN		2008	RTRN2008
				1043.518	.009	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1132.248	.131			1043.522	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1894
1132.248	.131			1043.522	.066	1996	GPS - STATIC		2003	HBAGL

Geoid Separations(ft): GEOID18 = -88.940 12B = -88.881 09 = -88.773 03 = -88.756

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				Red Lake County			Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method
Latitude	Longitude							
47 48 45.51430	95 59 55.41055			590413.287	214670.058	.010		ADJUSTMENT
47 48 45.51360	95 59 55.41039			590413.298	214669.987	.010	C	GPS - STATIC
47 48 45.51430	95 59 55.41055			590413.287	214670.058	.010		ADJUSTMENT

NAD83(2007)				Red Lake County			Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method
Latitude	Longitude							
47 48 45.51424	95 59 55.41150			590413.222	214670.051	.013		ADJUSTMENT

NAD83(1996)				Red Lake County			Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method
Latitude	Longitude							
47 48 45.51275	95 59 55.41132			590413.235	214669.900	.033	C	GPS - STATIC
47 48 45.51450	95 59 55.41245			590413.157	214670.077	.131	3	GPS - RTRN
47 48 45.51405	95 59 55.41163			590413.213	214670.032	.033	C	ADJUSTMENT
47 48 45.51405	95 59 55.41163			590413.213	214670.032	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912632.308	820209.986	903901.764	17387863.290	.010		ADJUSTMENT	2013	GPS2946
1912632.316	820209.914	903901.773	17387863.219	.010	C	GPS - STATIC	2013	HTERR
1912632.308	820209.986	903901.764	17387863.290	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912632.243	820209.982	903901.699	17387863.287	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1912632.249	820209.830	903901.706	17387863.135	.033	C	GPS - STATIC	2012	HTERR
1912632.179	820210.010	903901.635	17387863.315	.131	3	GPS - RTRN	2008	RTRN2008
1912632.233	820209.963	903901.690	17387863.268	.033	C	ADJUSTMENT	2003	GPS1894
1912632.233	820209.963	903901.690	17387863.268	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS_RM_1-SK0625-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS_RM_1-SK0625-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS_RM_1-SK0625-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKS RM 2

NGS Name: BROOKS RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK0624](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NE	14	150 N	42 W	474846.01	955957.08	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2012	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 10 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2002) **Stamping:** BROOKS NO 2 1964

IN BROOKS, 0.4 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 334.20, 200.0 FEET WEST OF TRUNK HIGHWAY 59, 68.0 FEET EAST OF A NORTH-SOUTH DIRT ROAD, 66.2 FEET SOUTHWEST OF THE SOUTHEAST CORNER OF A SHED, 55.0 FEET SOUTHEAST OF THE SOUTHWEST CORNER OF A SHED, 1.7 FEET NORTH OF THE NORTHWEST CORNER OF ANOTHER SHED.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Year	Reference
1132.783	.016	2/1				1991	00000025
Determination Method			VERTICAL ADJUSTMENT				

NGVD29			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Year	Reference
1131.589	.016	2				1978	L24405
Determination Method			VERTICAL CONTROL SURVEY				

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Year	Reference
1133.433	.262		1044.676	.197	1996	2008	RTRN2008
Determination Method			GPS - RTRN				

Geoid Separations(ft): GEOID18 = -88.940 12B = -88.881 09 = -88.770 03 = -88.756

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Year	Reference	
47 48 46.01157	95 59 57.07593	590299.373	214719.906	2008	RTRN2008	
Acc		Order		Determination Method		
.131		3		GPS - RTRN		

State Plane and UTM Coordinates (Feet)

NAD83(1996)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Year	Reference	
X	Y					
1912520.617	820264.595	903790.109	17387918.061	2008	RTRN2008	
Acc		Order		Determination Method		
.131		3		GPS - RTRN		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS_RM_2-SK0624-3S-20AUG2008.jpg	S	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS_RM_2-SK0624-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BROOKS_RM_2-SK0624-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKS ST JOSEPHS CATH CH

NGS Name: BROOKS ST JOSEPHS CATH CH

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1374](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/1012
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	14	150 N	42 W	474850.81	960012.40		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1964	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	CHURCH CROSS	NGS

Description: (1964)

Stamping:

IN BROOKS, 367.0 FEET SOUTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 387.0 FEET WEST ALONG WISCONSIN AVENUE, THEN 492.0 FEET SOUTH ALONG 1ST STREET, CROSS AT THE APEX OF THE SPIRE, ON THE EAST SIDE OF A BRICK CHURCH, 60.0 FEET IN HEIGHT.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.934 12B = -88.874 09 = -88.770 03 = -88.750

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 48 50.80919	96 00 12.40448	589250.809	215201.113	.328	4	ADJUSTMENT	1999	17648
47 48 50.80672	96 00 12.39922	589251.169	215200.865	.328	4	ADJUSTMENT	1998	17655

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 48 50.80688	96 00 12.39909	589251.178	215200.881	.328	4	ADJUSTMENT	1986	17289

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 48 50.94299	96 00 11.28079			.100	4	CLASSICAL SURVEY	1964	13522	

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911493.460	820789.600	902763.307	17388444.565	.328	4	ADJUSTMENT	1999	17648
1911493.809	820789.336	902763.656	17388444.301	.328	4	ADJUSTMENT	1998	17655

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911493.818	820789.352	902763.666	17388444.317	.328	4	ADJUSTMENT	1986	17289

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1286881.580	492715.528			.100	4	CLASSICAL SURVEY	1964	13522	



Mn/DOT Name: BUICK

NGS Name: BUICK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8564](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	4	151 N	42 W	475514.13	960233.48	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 13 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) Stamping: BUICK 2010

IN PLUMMER, 1.1 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 AT THE SOUTH EDGE OF PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 342.05, 49.8 FEET NORTHEAST OF TRUNK HIGHWAY 59, 11.2 FEET NORTH-NORTHWEST OF AN ENTRANCE, 115.8 FEET NORTHWEST OF A POWER POLE WITH A GUY WIRE, 4.4 FEET SOUTH OF A WITNESS POST.

Station Pair: SHAKA - RED LAKE, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1116.920	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1117.068	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1116.920			1027.819	.026	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1116.920	.131		1027.961	.066	1996	GPS - STATIC	2023	HERSK
1116.920			1027.819	.026	2011	GPS - STATIC	2023	HERSK
1117.068			1027.783	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1117.068			1027.783	.018	2011	GPS - STATIC	2013	HTERR
1117.006	.262		1027.875	.197	2007	GPS - RTRN	2012	RTRN2012
1117.058	.131		1027.931	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.294 12B = -89.186 09 = -89.130 03 = -89.127

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 55 14.13128	96 02 33.48276	579458.631	254001.581	.013		ADJUSTMENT	2023	GPS3597
47 55 14.13128	96 02 33.48276	579458.631	254001.581	.013	C	GPS - STATIC	2023	HERSK
47 55 14.13066	96 02 33.48239	579458.656	254001.519	.016		ADJUSTMENT	2013	GPS2946
47 55 14.13066	96 02 33.48239	579458.656	254001.519	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 55 14.13068	96 02 33.48460	579458.506	254001.520	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 55 14.13104	96 02 33.48344	579458.585	254001.557	.033	C	GPS - STATIC	2023	HERSK
47 55 14.13027	96 02 33.48345	579458.585	254001.479	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1903350.373	859963.770	894669.699	17427642.264	.013		ADJUSTMENT	2023	GPS3597
1903350.373	859963.770	894669.699	17427642.264	.013	C	GPS - STATIC	2023	HERSK
1903350.396	859963.706	894669.722	17427642.200	.016		ADJUSTMENT	2013	GPS2946
1903350.396	859963.706	894669.722	17427642.200	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1903350.246	859963.713	894669.572	17427642.208	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1903350.326	859963.747	894669.652	17427642.242	.033	C	GPS - STATIC	2023	HERSK
1903350.322	859963.669	894669.648	17427642.164	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BUICK-DO8564-3NE-04OCT2018.jpg	NE	Oct 4, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BUICK-DO8564-2-04OCT2018.jpg		Oct 4, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/BUICK-DO8564-1-04OCT2018.jpg		Oct 4, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: C 319

NGS Name: C 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0018](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	3	149 N	44 W	474536.00	961717.00	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	1980	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1940)

Stamping: C 319 1940

0.3 MILE SOUTH-SOUTHEAST OF DELORME, 0.5 MILE SOUTH ALONG A RAILROAD FROM DELORME, 0.2 MILE SOUTH ALONG TRUNK HIGHWAY 2 WEST IN DELORME, THEN 121.0 FEET EAST ALONG TRUNK HIGHWAY 2 EAST, 369.0 FEET SOUTH OF MILEPOST 61, AT A CROSSING OF TRUNK HIGHWAY 2, 49.5 FEET NORTH OF THE CENTER OF THE HIGHWAY, 26.4 FEET WEST OF THE WEST RAIL, 49.5 FEET EAST OF THE CENTER OF A NORTH-SOUTH ROAD, 2.1 FEET EAST OF A TELEPHONE POLE, 2.1 FEET NORTH OF A WHITE WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1087.363	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1086.763	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT
1086.199	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1086.199	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -88.392 12B = -88.359 09 = -88.274 03 = -88.261

* No Horizontal Positions in the Database *



Mn/DOT Name: CHOLE

NGS Name: CHOLE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8549](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	29	152 N	42 W	475749.01	960353.85	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2009	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 18 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2009)

Stamping: CHOLE 2009

4.0 MILES NORTH OF PLUMMER, 4.25 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER TO TRUNK HIGHWAY 59 MILEPOINT 345.10, THEN 0.5 MILE WEST ON 140TH STREET SOUTHEAST (RED LAKE PENNINGTON COUNTY LINE), 23.5 FEET SOUTH OF 140TH STREET SOUTHEAST (RED LAKE/PENNINGTON COUNTY LINE), 13.0 FEET EAST OF A FIELD ENTRANCE, 73.4 FEET SOUTHWEST OF A POLE, 7.6 FEET NORTHWEST OF A WITNESS POST.

Station Pair: REDPENN - RED LAKE, MN

Station Notes

THE SURVEY MARK MAY BE HARD TO SET UP ON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.116	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1120.273	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.116			1031.015	.031	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1120.116	.131		1031.153	.066	1996	GPS - STATIC	2023	HERSK
1120.116			1031.015	.031	2011	GPS - STATIC	2023	HERSK
1120.332	.262		1031.084	.197	2011	GPS - OPUS	2022	GPSBM
1120.099	.262		1030.848	.197	2011	GPS - RTRN	2021	RTRN2021
1120.195	.262		1031.048	.197	2011	GPS - RTRN	2020	RTRN2020
1120.273			1031.018	.029	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1120.273			1031.018	.029	2011	GPS - STATIC	2013	HTERR
1120.172	.262		1031.084	.197	2007	GPS - RTRN	2012	RTRN2012
1120.273	.131		1031.169	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.249 12B = -89.144 09 = -89.088 03 = -89.107

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 57 49.00851	96 03 53.85475	573922.768	269673.880	.016		ADJUSTMENT	2023	GPS3597
47 57 49.00851	96 03 53.85475	573922.768	269673.880	.016	C	GPS - STATIC	2023	HERSK
47 57 49.00828	96 03 53.85589	573922.690	269673.857	.131	3	GPS - OPUS	2022	GPSBM
47 57 49.00871	96 03 53.85552	573922.715	269673.900	.131	3	GPS - RTRN	2021	RTRN2021
47 57 49.00863	96 03 53.85415	573922.809	269673.892	.131	3	GPS - RTRN	2020	RTRN2020
47 57 49.00924	96 03 53.85521	573922.736	269673.954	.016		ADJUSTMENT	2013	GPS2946
47 57 49.00924	96 03 53.85521	573922.736	269673.954	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 57 49.00891	96 03 53.85677	573922.630	269673.920	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 57 49.00828	96 03 53.85547	573922.719	269673.857	.033	C	GPS - STATIC	2023	HERSK
47 57 49.00891	96 03 53.85669	573922.636	269673.920	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1898482.237	875853.784	889821.831	17443544.286	.016		ADJUSTMENT	2023	GPS3597
1898482.237	875853.784	889821.831	17443544.286	.016	C	GPS - STATIC	2023	HERSK
1898482.159	875853.764	889821.752	17443544.265	.131	3	GPS - OPUS	2022	GPSBM
1898482.186	875853.806	889821.779	17443544.308	.131	3	GPS - RTRN	2021	RTRN2021
1898482.279	875853.795	889821.872	17443544.296	.131	3	GPS - RTRN	2020	RTRN2020
1898482.209	875853.859	889821.802	17443544.361	.016		ADJUSTMENT	2013	GPS2946
1898482.209	875853.859	889821.802	17443544.361	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1898482.102	875853.830	889821.695	17443544.332	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1898482.188	875853.762	889821.781	17443544.264	.033	C	GPS - STATIC	2023	HERSK
1898482.107	875853.829	889821.700	17443544.331	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CHOLE-DO8549-3S-21OCT2021.jpg	S	Oct 21, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CHOLE-DO8549-2-21OCT2021.jpg		Oct 21, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CHOLE-DO8549-1-21OCT2021.jpg		Oct 21, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CLARA MNDT

NGS Name: CLARA

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0044](#)

[Get Map](#)

NGS Quad / Sta Num : 47096111/

USGS Quad: PLUMMER

		<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>
NW	29	152 N	42 W	475749.09	960356.33

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2008	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	STEEL ROD IMBED IN MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (2008)

Stamping: CLARA 1977

3.85 MILES NORTH OF PLUMMER, 4.25 MILES NORTHWEST AND NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 124, TO TRUNK HIGHWAY 59 MILEPOST 345.158, 0.55 MILE WEST ON 140TH STREET SOUTHEAST, 13.0 FEET SOUTH OF A GRAVEL ROAD, 160.0 FEET WEST OF A FIELD ENTRANCE, 23.4 FEET NORTH OF A FENCE, 35.35 FEET NORTHWEST OF CLARA MNDT RM 1, 37.81 FEET NORTHEAST OF CLARA MNDT RM 2, 22.7 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS REMOVED BY A BLADE, THE STEM IS STILL THERE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.487	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1119.230	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.470	.197		1031.688	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.249 12B = -89.144 09 = -89.088 03 = -89.104

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 57 49.09099	96 03 56.32741	573754.448	269681.582	.066	2	ADJUSTMENT	1999	17648
47 57 49.08777	96 03 56.32186	573754.827	269681.257	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 57 49.08777	96 03 56.32183	573754.829	269681.257	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 57 49.21586	96 03 55.20430			.100	2	CLASSICAL SURVEY	1978	16128



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1898314.416	875868.588	889653.973	17443559.328	.066	2	ADJUSTMENT	1999	17648
1898314.781	875868.248	889654.337	17443558.987	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1898314.783	875868.248	889654.340	17443558.987	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1273701.767	547793.450			.100	2	CLASSICAL SURVEY	1978	16128

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CLARA-SL0044-3S-25AUG2008.jpg	S	Aug 25, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CLARA-SL0044-2-25AUG2008.jpg		Aug 25, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CLARA-SL0044-1-25AUG2008.jpg		Aug 25, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CLARA MNDT RM 1

NGS Name: CLARA RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0043](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	29	152 N	42 W	475748.88	960355.91	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	REFERENCE MARK DISK	MNDT

Description: (1977)

Stamping: CLARA NO 1 1977

3.85 MILES NORTHWEST OF PLUMMER, 4.25 MILES NORTHWEST AND NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, THEN 0.6 MILE WEST ALONG A GRAVEL ROAD, 34.0 FEET SOUTH OF AN EAST-WEST GRAVEL ROAD, 35.4 FEET SOUTHEAST OF STATION CLARA MNDT, 58.9 FEET EAST OF CLARA MNDT RM 2, 28.0 FEET EAST OF A WITNESS POST.

Station Notes

FALLS IN A FIELD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1119.447	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1118.190	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.249 12B = -89.144 09 = -89.088 03 = -89.104

* No Horizontal Positions in the Database *



Mn/DOT Name: CLARA MNDT RM 2

NGS Name: CLARA RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0045](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	29	152 N	42 W	475748.87	960356.77	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

Monument Type

UNKNOWN

Disk Type

REFERENCE MARK DISK

Mon. Agency

MNDT

Description: (1977)

Stamping: CLARA NO 2 1977

3.85 MILES NORTHWEST OF PLUMMER, 4.25 MILES NORTHWEST AND NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, THEN 0.6 MILE WEST ALONG A GRAVEL ROAD, 34.0 FEET SOUTH OF AN EAST-WEST GRAVEL ROAD ALONG THE COUNTY LINE, 1.6 FEET NORTH OF THE EAST-WEST FENCE LINE, 37.8 FEET SOUTHWEST OF STATION CLARA MNDT, 58.9 FEET WEST OF CLARA MNDT RM 1.

Station Notes

FALLS IN A FIELD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1119.775	.016	2/1				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1118.518	.016	2				VERTICAL CONTROL SURVEY		1978	L24405

Geoid Separations(ft): GEOID18 = -89.249 12B = -89.144 09 = -89.088 03 = -89.104

* No Horizontal Positions in the Database *



Mn/DOT Name: COAL MNDT

NGS Name: COAL

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0065](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	151 N	42 W	475234.80	960110.64	2	2	1977	2012	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2012)

Stamping: COAL 1977

2.55 MILES SOUTHEAST OF PLUMMER, 2.15 MILES SOUTHEAST ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 338.75, 112.6 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 59, 52.0 FEET SOUTH OF COUNTY ROAD 20 (200TH STREET SOUTHEAST), 10.3 FEET EAST-SOUTHEAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 69.56 FEET SOUTH OF COAL MNDT RM 1, 30.39 FEET EAST OF COAL MNDT RM 2, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1137.442	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1137.570	.016	2/1				VERTICAL CONTROL SURVEY	2013 VMAHN
1137.616	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1136.389	.016	2/1				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1136.389	.016	2				VERTICAL CONTROL SURVEY	1978 L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1137.406	.262		1048.321	.197	2007	GPS - RTRN	2012 RTRN2012
1137.412	.262		1048.351	.197	1996	GPS - RTRN	2008 RTRN2008
1137.629	.197		1048.827	.131	1996	HORIZONTAL ADJUSTMENT	1999 17648

Geoid Separations(ft): GEOID18 = -89.242 12B = -89.140 09 = -89.081 03 = -89.062

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2007)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.80545	96 01 10.63952		585174.048	237881.001	.131	3	GPS - RTRN	2012	RTRN2012
<u>NAD83(1996)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.80634	96 01 10.64075		585173.964	237881.091	.131	3	GPS - RTRN	2008	RTRN2008
47 52 34.80414	96 01 10.64000		585174.016	237880.868	.066	2	ADJUSTMENT	1999	17648
47 52 34.80161	96 01 10.63401		585174.425	237880.613	.066	2	ADJUSTMENT	1998	17655
<u>NAD83(1986)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.80137	96 01 10.63457		585174.387	237880.589	.066	2	ADJUSTMENT	1986	17289
<u>NAD27</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.93481	96 01 09.51493				.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1908378.940	843618.351	899677.844	17411284.724	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1908378.860	843618.444	899677.764	17411284.817	.131	3	GPS - RTRN	2008	RTRN2008
1908378.903	843618.220	899677.807	17411284.592	.066	2	ADJUSTMENT	1999	17648
1908379.301	843617.948	899678.205	17411284.320	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1908379.262	843617.925	899678.166	17411284.297	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1283766.890	515543.764			.100	2	CLASSICAL SURVEY	1978	16128

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL-SL0065-3N-30SEP2021.jpg	N	Sep 30, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL-SL0065-2-30SEP2021.jpg		Sep 30, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL-SL0065-1-30SEP2021.jpg		Sep 30, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: COAL MNDT RM 1

NGS Name: COAL RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0063](#)

[Get Map](#)

NGS Quad / Sta Num : 47096111/

USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	151 N	42 W	475235.45	960111.01	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2012)

Stamping: COAL NO 1 1977

2.55 MILES SOUTHEAST OF PLUMMER, 2.15 MILES SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 338.75, 14.0 FEET NORTH OF COUNTY ROAD 20, 69.56 FEET NORTH OF STATION COAL MNDT, 8.0 FEET EAST-NORTHEAST OF THE NORTHEAST RAIL OF THE RAILROAD TRACKS, 9.5 FEET WEST OF A RAILROAD CROSSING POST, 7.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1138.400	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1138.528	.016	2/1				VERTICAL CONTROL SURVEY	2013 VMAHN
1138.574	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1137.344	.016	2/1				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1137.344	.016	2				VERTICAL CONTROL SURVEY	1978 L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1138.384	.262		1049.302	.197	2007	GPS - RTRN	2012 RTRN2012
1138.446	.262		1049.384	.197	1996	GPS - RTRN	2008 RTRN2008

Geoid Separations(ft): GEOID18 = -89.242 12B = -89.140 09 = -89.084 03 = -89.062

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2007)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 52 35.44593	96 01 11.01006	585148.495	237945.789	.131	3	GPS - RTRN
<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 52 35.44595	96 01 11.00990	585148.506	237945.791	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1908356.151	843684.152	899655.136	17411350.577	.131	3	GPS - RTRN
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1908356.162	843684.154	899655.147	17411350.578	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL_RM_1-SL0063-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL_RM_1-SL0063-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL_RM_1-SL0063-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: COAL MNDT RM 2

NGS Name: COAL RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0064](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	151 N	42 W	475234.81	960111.09	2	3	1977	2012	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2012)

Stamping: COAL NO 2 1977

2.55 MILES SOUTHEAST OF PLUMMER, 2.15 MILES SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 11N PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 338.75, 52.0 FEET SOUTH OF COUNTY ROAD 20, 13.3 FEET WEST-SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 66.0 FEET SOUTH OF A RAILROAD CROSSING POST, 30.39 FEET WEST OF STATION COAL MNDT, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1137.111	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1137.239	.016	2/1				VERTICAL CONTROL SURVEY	2013 VMAHN
1137.258	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1136.028	.016	2/1				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1136.028	.016	2				VERTICAL CONTROL SURVEY	1978 L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1137.124	.262		1048.043	.197	2007	GPS - RTRN	2012 RTRN2012
1137.127	.262		1048.065	.197	1996	GPS - RTRN	2008 RTRN2008

Geoid Separations(ft): GEOID18 = -89.242 12B = -89.140 09 = -89.081 03 = -89.062

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2007)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
47 52 34.81030	96 01 11.08688		585143.547	237881.355	.131	3	GPS - RTRN	2012	RTRN2012
<u>NAD83(1996)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
47 52 34.81015	96 01 11.08828		585143.452	237881.340	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

<u>NAD83(2007)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1908348.486	843619.994	899647.383	17411286.408	.131	3	GPS - RTRN	2012	RTRN2012	
<u>NAD83(1996)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1908348.391	843619.982	899647.287	17411286.396	.131	3	GPS - RTRN	2008	RTRN2008	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL_RM_2-SL0064-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL_RM_2-SL0064-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/COAL_RM_2-SL0064-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CYR MNDT

NGS Name: CYR

County: RED LAKE, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	13	151 N	44 W	475333.93	961413.55	2	C

NGS ACRN: [AJ8463](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1998	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (1998)

Stamping: CYR 1998

1.5 MILES NORTHEAST OF RED LAKE FALLS, 1.4 MILES NORTHEAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 13 AT THE NORTHEAST EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 87.85, 80.0 FEET NORTHWEST OF TRUNK HIGHWAY 32, 34.0 FEET WEST-SOUTHWEST OF AN ENTRANCE, 13.7 FEET WEST-NORTHWEST OF A RIGHT-OF-WAY POST, 47.7 FEET SOUTHWEST OF A RIGHT-OF-WAY POST, 3.3 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj	Determination Method	Year Reference
1034.473	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1034.473	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1034.532	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1034.653	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj	Determination Method	Year Reference
1034.604	.262		945.464	.197	2011	GPS - OPUS	2022 GPSBM
1034.542	.262		945.398	.197	2011	GPS - RTRN	2021 RTRN2021
1034.450	.262		945.310	.197	2011	GPS - RTRN	2019 RTRN2019
1034.653			945.526	.012	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1034.653			945.503	.012	2011	GPS - STATIC	2013 HTERR
1034.644	.131		945.625	.066	1996	GPS - STATIC	2012 HTERR
			945.526	.010	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			945.644	.011	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1034.644	.131		945.605	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1663
1034.644	.131		945.605	.066	1996	GPS - STATIC	2001 H3986

Geoid Separations(ft): GEOID18 = -89.144 12B = -89.016 09 = -88.993 03 = -89.029

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		Red Lake County		Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 53 33.93438	96 14 13.55176	531789.744	243708.226	.131	3	GPS - OPUS	2022 GPSBM
47 53 33.93486	96 14 13.55157	531789.757	243708.274	.131	3	GPS - RTRN	2021 RTRN2021
47 53 33.93432	96 14 13.55579	531789.470	243708.219	.131	3	GPS - RTRN	2019 RTRN2019
47 53 33.93605	96 14 13.55270	531789.680	243708.394	.010		ADJUSTMENT	2013 GPS2946
47 53 33.93539	96 14 13.55235	531789.704	243708.328	.010	C	GPS - STATIC	2013 HTERR
47 53 33.93605	96 14 13.55270	531789.680	243708.394	.013		ADJUSTMENT	2012 GPS2800

NAD83(2007)		Geodetic Position		Red Lake County		Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 53 33.93599	96 14 13.55374	531789.609	243708.388	.013		ADJUSTMENT	2007 GPS2300

NAD83(1996)		Geodetic Position		Red Lake County		Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 53 33.93481	96 14 13.55336	531789.635	243708.269	.033	C	GPS - STATIC	2012 HTERR
47 53 33.93592	96 14 13.55363	531789.617	243708.381	.033	C	ADJUSTMENT	2002 GPS1663
47 53 33.93592	96 14 13.55363	531789.616	243708.381	.033	C	GPS - STATIC	2001 H3986

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1855295.741	851694.633	846585.946	17419435.323	.131	3	GPS - OPUS	2022	GPSBM
1855295.756	851694.681	846585.961	17419435.371	.131	3	GPS - RTRN	2021	RTRN2021
1855295.466	851694.638	846585.671	17419435.328	.131	3	GPS - RTRN	2019	RTRN2019
1855295.684	851694.805	846585.889	17419435.494	.010		ADJUSTMENT	2013	GPS2946
1855295.705	851694.737	846585.910	17419435.426	.010	C	GPS - STATIC	2013	HTERR
1855295.684	851694.805	846585.889	17419435.494	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1855295.613	851694.802	846585.818	17419435.491	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1855295.634	851694.681	846585.839	17419435.371	.033	C	GPS - STATIC	2012	HTERR
1855295.620	851694.794	846585.825	17419435.484	.033	C	ADJUSTMENT	2002	GPS1663
1855295.620	851694.795	846585.825	17419435.484	.033	C	GPS - STATIC	2001	H3986

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CYR-AJ8463-3NW-20OCT2021.jpg	NW	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CYR-AJ8463-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/CYR-AJ8463-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: D 319

NGS Name: D 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0016](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	22	150 N	44 W	474722.00	961718.00	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2003	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1940) Stamping: D 319 1940

1.5 MILES NORTH OF DELORME, 1.6 MILES SOUTH OF PERAULT, 0.6 MILE EAST ALONG TRUNK HIGHWAY 2 EAST FROM THE JUNCTION OF TRUNK HIGHWAY 2 EAST AND TRUNK HIGHWAY 2 WEST 0.3 MILE SOUTH OF DELORME, THEN 2.0 MILES EAST ALONG TRUNK HIGHWAY 2 (COUNTY HIGHWAY 49), THEN 1.0 MILE NORTH ALONG TRUNK HIGHWAY 32 NORTH, 11 RAILS SOUTH OF RAILROAD MILEPOST 63, 40.2 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, AT AN ABANDONED ROAD CROSSING, 29.0 FEET NORTH OF A RAILROAD, 3.1 FEET SOUTH OF A WITNESS POST.

Station Notes

THE AREA WAS REGRADED, THE RAILROAD IS GONE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1067.111	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1065.930	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1065.930	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -88.638 12B = -88.579 09 = -88.520 03 = -88.507

* No Horizontal Positions in the Database *



Mn/DOT Name: DUFUS

NGS Name: DUFUS

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DQ8565](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	27	151 N	42 W	475217.56	960059.28	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) **Stamping:** DUFUS 2010

3.0 MILES SOUTH-SOUTHEAST OF PLUMMER, 2.5 MILES SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF COUNTY ROAD 1 AND TRUNK HIGHWAY 59 AT THE SOUTH EDGE OF PLUMMER, AT TRUNK HIGHWAY MILEPOINT 338.4, 32.1 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 59, 7.5 FEET SOUTH-SOUTHEAST OF AN ENTRANCE, 63.0 FEET SOUTHWEST OF A POWER POLE, 5.1 FEET NORTHWEST OF A WITNESS POST.

Station Pair: TONY - RED LAKE, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1136.920	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1137.048	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1136.920			1047.823	.017	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1136.920	.131		1047.983	.066	1996	GPS - STATIC	2023	HERSK
1136.920			1047.823	.017	2011	GPS - STATIC	2023	HERSK
1137.022			1047.823	.020	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1137.022			1047.823	.020	2011	GPS - STATIC	2013	HTERR
1137.038	.131		1047.983	.066	1996	GPS - STATIC	2012	HTERR
1136.868	.262		1047.800	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -89.226 12B = -89.130 09 = -89.068 03 = -89.045

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 17.56076	96 00 59.27699	585956.591	236137.035	.010		ADJUSTMENT	2023	GPS3597
47 52 17.56076	96 00 59.27699	585956.591	236137.035	.010	C	GPS - STATIC	2023	HERSK
47 52 17.56076	96 00 59.27699	585956.591	236137.035	.016		ADJUSTMENT	2013	GPS2946
47 52 17.56076	96 00 59.27699	585956.591	236137.035	.016	C	GPS - STATIC	2013	HTERR
NAD83(2007)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 17.56074	96 00 59.27738	585956.564	236137.032	.131	3	GPS - RTRN	2012	RTRN2012
NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 17.56049	96 00 59.27784	585956.533	236137.007	.033	C	GPS - STATIC	2023	HERSK
47 52 17.56049	96 00 59.27784	585956.533	236137.007	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1909087.009	841843.124	900383.772	17409507.980	.010		ADJUSTMENT	2023	GPS3597
1909087.009	841843.124	900383.772	17409507.980	.010	C	GPS - STATIC	2023	HERSK
1909087.009	841843.124	900383.772	17409507.980	.016		ADJUSTMENT	2013	GPS2946
1909087.009	841843.124	900383.772	17409507.980	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1909086.982	841843.123	900383.746	17409507.979	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1909086.950	841843.099	900383.713	17409507.955	.033	C	GPS - STATIC	2023	HERSK
1909086.950	841843.099	900383.713	17409507.955	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/DUFUS-DO8565-3E-21JUL2010.jpg	E	Jul 21, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/DUFUS-DO8565-2-21JUL2010.jpg		Jul 21, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/DUFUS-DO8565-1-21JUL2010.jpg		Jul 21, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DUMP

NGS Name: DUMP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8398](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	21	151 N	44 W	475316.51	961725.08	2	C	2008	2012	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	SURVEY DISK	MN-125

Description: (2008) Stamping: DUMP 2008

0.8 MILE WEST OF RED LAKE FALLS, 1.2 MILES WEST ALONG 3RD STREET FROM THE JUNCTION OF 3RD STREET AND TRUNK HIGHWAY 32 IN RED LAKE FALLS, 53.0 FEET SOUTH OF 3RD STREET, 53.0 FEET SOUTH OF A GATED POWER POLE, 43.6 FEET SOUTH OF A DUMP DRIVEWAY, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1034.237	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1034.358	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1034.358			945.205	.023	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1034.358			945.205	.023	2011	GPS - STATIC	2013 HTERR
1034.348	.131		945.323	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -89.137 12B = -89.016 09 = -88.999 03 = -89.035

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 53 16.50978	96 17 25.08453	518738.004	241925.122	.016		ADJUSTMENT
47 53 16.50978	96 17 25.08453	518738.004	241925.122	.016	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 53 16.50951	96 17 25.08544	518737.942	241925.095	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1842182.114	850464.694	833465.053	17418222.582	.016		ADJUSTMENT
1842182.114	850464.694	833465.053	17418222.582	.016	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1842182.051	850464.669	833464.990	17418222.558	.033	C	GPS - STATIC

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/DUMP-DN8398-3W-20MAY2009.jpg	W	May 20, 2009
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/DUMP-DN8398-2-20MAY2009.jpg		May 20, 2009
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/DUMP-DN8398-1-20MAY2009.jpg		May 20, 2009

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E 319

NGS Name: E 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0015](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	15	150 N	44 W	474813.00	961718.00	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2003	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1940) **Stamping:** E 319 1940

0.6 MILE SOUTH OF PERAULT, 0.8 MILE SOUTH ALONG COUNTY ROAD 112 IN PERAULT, THEN 98.0 FEET EAST ALONG COUNTY ROAD 14 FROM THE JUNCTION OF COUNTY ROAD 14 AND COUNTY ROAD 112, 11 RAILS SOUTH OF RAILROAD MILEPOST 64, 55.5 FEET NORTH OF A ROAD, 46.5 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 28.8 FEET EAST OF A ROAD ALONG A RAILROAD, 2.1 FEET NORTH OF A WITNESS POST.

Station Notes

THE MONUMENT WAS FOUND WITH THE TOP THIRD SMASHED, NO DISK WAS FOUND.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1055.746	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1054.558	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1054.558	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -88.740 12B = -88.671 09 = -88.615 03 = -88.602

* No Horizontal Positions in the Database *



Mn/DOT Name: EMARD MNDT

NGS Name: EMARD

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0069](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	151 N	42 W	475109.96	960022.92	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2012)

Stamping: EMARD 1977

2.5 MILES NORTH OF BROOKS, 2.35 MILES NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 337.05, 73.5 FEET EAST-SOUTHEAST OF TRUNK HIGHWAY 59, 12.0 FEET SOUTH-SOUTHEAST OF A FIELD ENTRANCE, 23.8 FEET NORTHWEST OF A POWER POLE, 23.67 FEET NORTH-NORTHWEST OF EMARD MNDT RM 2, 25.0 FEET NORTHWEST OF A WITNESS POST FOR EMARD MNDT RM 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1132.737	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1132.862	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1132.875	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.658	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1131.658	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1132.737			1043.725	.009	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1132.737	.131		1043.905	.066	1996	GPS - STATIC	2023	HERSK
1132.737			1043.725	.009	2011	GPS - STATIC	2023	HERSK
1132.891	.262		1043.745	.197	2011	GPS - OPUS	2020	GPSBM
1132.750	.262		1043.682	.197	2011	GPS - RTRN	2020	RTRN2020
1132.875			1043.725	.009	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1132.875			1043.725	.009	2011	GPS - STATIC	2013	HTERR
1132.872	.131		1043.905	.066	1996	GPS - STATIC	2012	HTERR
1132.731	.262		1043.741	.197	2007	GPS - RTRN	2012	RTRN2012
1132.626	.262		1043.659	.197	1996	GPS - RTRN	2008	RTRN2008
1132.872	.197		1044.165	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.147 12B = -89.068 09 = -88.993 03 = -88.966



Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 51 09.95882	96 00 22.91525	588467.664	229298.126	.010		ADJUSTMENT	2023	GPS3597
47 51 09.95882	96 00 22.91525	588467.664	229298.126	.010	C	GPS - STATIC	2023	HERSK
47 51 09.95846	96 00 22.91584	588467.624	229298.089	.131	3	GPS - OPUS	2020	GPSBM
47 51 09.95897	96 00 22.91484	588467.692	229298.141	.131	3	GPS - RTRN	2020	RTRN2020
47 51 09.95882	96 00 22.91525	588467.664	229298.126	.013		ADJUSTMENT	2013	GPS2946
47 51 09.95882	96 00 22.91525	588467.664	229298.126	.013	C	GPS - STATIC	2013	HTERR

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 51 09.95884	96 00 22.91508	588467.676	229298.128	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 51 09.95839	96 00 22.91619	588467.600	229298.082	.033	C	GPS - STATIC	2023	HERSK
47 51 09.95839	96 00 22.91619	588467.600	229298.082	.033	C	GPS - STATIC	2012	HTERR
47 51 09.95916	96 00 22.91503	588467.679	229298.160	.131	3	GPS - RTRN	2008	RTRN2008
47 51 09.95723	96 00 22.91552	588467.647	229297.965	.066	2	ADJUSTMENT	1999	17648
47 51 09.95472	96 00 22.90981	588468.037	229297.712	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 51 09.95458	96 00 22.91018	588468.012	229297.698	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 51 10.08894	96 00 21.79097			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911306.608	834905.182	902594.875	17402564.876	.010		ADJUSTMENT	2023	GPS3597
1911306.608	834905.182	902594.875	17402564.876	.010	C	GPS - STATIC	2023	HERSK
1911306.566	834905.147	902594.833	17402564.841	.131	3	GPS - OPUS	2020	GPSBM
1911306.636	834905.196	902594.903	17402564.890	.131	3	GPS - RTRN	2020	RTRN2020
1911306.608	834905.182	902594.875	17402564.876	.013		ADJUSTMENT	2013	GPS2946
1911306.608	834905.182	902594.875	17402564.876	.013	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911306.620	834905.184	902594.887	17402564.878	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911306.542	834905.141	902594.809	17402564.835	.033	C	GPS - STATIC	2023	HERSK
1911306.542	834905.141	902594.809	17402564.835	.033	C	GPS - STATIC	2012	HTERR
1911306.624	834905.216	902594.891	17402564.910	.131	3	GPS - RTRN	2008	RTRN2008
1911306.584	834905.022	902594.850	17402564.716	.066	2	ADJUSTMENT	1999	17648
1911306.963	834904.753	902595.230	17402564.446	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911306.937	834904.740	902595.204	17402564.433	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1286694.675	506830.701			.100	2	CLASSICAL SURVEY	1978	16128



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/EMARD-SL0069-3E-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/EMARD-SL0069-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/EMARD-SL0069-1-16JUN2020.jpg

<u>Dir</u>	<u>Date</u>
E	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: EMARD MNDT RM 1

NGS Name: EMARD RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0068](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	35	151 N	42 W	475110.24	960023.09	2		1977	2012	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1977)

Stamping: EMARD NO 1 1977

2.5 MILES NORTH OF BROOKS, 2.35 MILES NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 337.0, 71.4 FEET EAST OF TRUNK HIGHWAY 59, 39.6 FEET SOUTHEAST OF THE SOUTH END OF A METAL CULVERT, 18.0 FEET NORTH OF A FIELD ENTRANCE, 54.9 FEET NORTH-NORTHWEST OF A POWER POLE, 57.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1133.157	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1131.943	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.144 12B = -89.062 09 = -88.986 03 = -88.957

* No Horizontal Positions in the Database *



Mn/DOT Name: EMARD MNDT RM 2

NGS Name: EMARD RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0070](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	151 N	42 W	475109.75	960022.76	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2018	GOOD	Horz=YES Vert=YES	YES		PROJECTS 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1977)

Stamping: EMARD NO 2 1977

2.5 MILES NORTH OF BROOKS, 2.35 MILES NORTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 337.0, 77.8 FEET EAST OF TRUNK HIGHWAY 59, 35.4 FEET SOUTHEAST OF THE SOUTH END OF A METAL CULVERT, 36.0 FEET SOUTH OF A FIELD ENTRANCE, 23.67 FEET SOUTH-SOUTHEAST OF STATION EMARD MNDT, 3.0 FEET WEST OF A POWER POLE, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1133.052	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1133.177	.016	2/1				VERTICAL CONTROL SURVEY	2013 VMAHN
1133.177	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1131.963	.016	2/1				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1131.963	.016	2				VERTICAL CONTROL SURVEY	1978 L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1132.954	.262		1043.961	.197	2007	GPS - RTRN	2012 RTRN2012
1133.069	.262		1044.106	.197	1996	GPS - RTRN	2008 RTRN2008

Geoid Separations(ft): GEOID18 = -89.150 12B = -89.068 09 = -88.993 03 = -88.963

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2007)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 51 09.75041	96 00 22.75769		588478.509	229277.057	.131	3	GPS - RTRN	2012	RTRN2012
<u>NAD83(1996)</u>			<u>Red Lake County</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 51 09.75040	96 00 22.75928		588478.400	229277.056	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

<u>NAD83(2007)</u>								
MN State Plane - North Zone		UTM - Zone 15		Project Info				
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911316.552	834883.677	902604.793	17402543.351	.131	3	GPS - RTRN	2012	RTRN2012
<u>NAD83(1996)</u>								
MN State Plane - North Zone		UTM - Zone 15		Project Info				
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911316.443	834883.680	902604.685	17402543.354	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/EMARD_RM_2-SL0070-3E-04OCT2018.jpg	E	Oct 4, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/EMARD_RM_2-SL0070-2-04OCT2018.jpg		Oct 4, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/EMARD_RM_2-SL0070-1-04OCT2018.jpg		Oct 4, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ET 1 MES

NGS Name: ET 1 MES

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0059](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	10	151 N	42 W	475420.86	960049.88	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2008)

Stamping: ET 1 MES 1963

1.3 MILES SOUTHEAST OF PLUMMER, 0.95 MILE EAST ON COUNTY ROAD 1 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, 49.0 FEET NORTH OF COUNTY ROAD 1, 242.5 FEET EAST OF ET 1 MES RM 1, 16.0 FEET WEST OF A FIELD ENTRANCE, 10.0 FEET SOUTHEAST OF A TELEPHONE CABLE MARKER NUMBER FE5, 11.1 FEET SOUTH-SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1141.609	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1141.756	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD
1141.756	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1141.756	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1140.516	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1141.868	.262		1052.541	.197	2011	GPS - OPUS	2020	GPSBM
1141.786	.262		1052.557	.197	2011	GPS - RTRN	2020	RTRN2020
1141.756			1052.432	.019	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1141.756			1052.432	.019	2011	GPS - STATIC	2013	HTERR
1141.536	.262		1052.367	.197	2007	GPS - RTRN	2012	RTRN2012
1141.730	.131		1052.577	.066	1996	GPS - STATIC	2012	HTERR
1141.763	.262		1052.882	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.327 12B = -89.229 09 = -89.166 03 = -89.150

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.86405	96 00 49.87868	586540.332	248634.701	.131	3	GPS - OPUS	2020	GPSBM
47 54 20.86431	96 00 49.87724	586540.430	248634.728	.131	3	GPS - RTRN	2020	RTRN2020
47 54 20.86432	96 00 49.87809	586540.372	248634.729	.020		ADJUSTMENT	2013	GPS2946
47 54 20.86432	96 00 49.87809	586540.372	248634.729	.020	C	GPS - STATIC	2013	HTERR

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.86449	96 00 49.87928	586540.290	248634.746	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.86400	96 00 49.87907	586540.305	248634.696	.033	C	GPS - STATIC	2012	HTERR
47 54 20.84827	96 00 49.90860	586538.300	248633.093	.131	3	ADJUSTMENT	1999	17648
47 54 20.84471	96 00 49.90458	586538.576	248632.733	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.84471	96 00 49.90474	586538.565	248632.733	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 54 20.99037	96 00 48.81271			.100	3	CLASSICAL SURVEY	1980	16196
47 54 21.01200	96 00 48.78600			.100	3	CLASSICAL SURVEY	1963	USGS-HORZ

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1910198.077	854303.268	901511.933	17421970.621	.131	3	GPS - OPUS	2020	GPSBM
1910198.176	854303.290	901512.032	17421970.644	.131	3	GPS - RTRN	2020	RTRN2020
1910198.118	854303.294	901511.974	17421970.647	.020		ADJUSTMENT	2013	GPS2946
1910198.118	854303.294	901511.974	17421970.647	.020	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1910198.037	854303.314	901511.894	17421970.667	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1910198.050	854303.264	901511.906	17421970.617	.033	C	GPS - STATIC	2012	HTERR
1910195.979	854301.747	901509.833	17421969.103	.131	3	ADJUSTMENT	1999	17648
1910196.239	854301.376	901510.093	17421968.731	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1910196.228	854301.377	901510.082	17421968.732	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1285582.022	526228.504			.100	3	CLASSICAL SURVEY	1980	16196
1285583.923	526230.626			.100	3	CLASSICAL SURVEY	1963	USGS-HORZ

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_1_MES-SL0059-3N-16JUN2020.jpg	N	Jun 16, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_1_MES-SL0059-2-16JUN2020.jpg		Jun 16, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_1_MES-SL0059-1-16JUN2020.jpg		Jun 16, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ET 1 MES AZ MK

NGS Name: ET 1 MES AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0057](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	10	151 N	42 W	475424.00	960118.00	2		1963	2012	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	STEEL SPIKE ADJ TO MON

Monument Type

UNKNOWN

Disk Type

AZIMUTH MARK DISK

Mon. Agency

USGS

Description: (1963)

Stamping: ET 1 MES 1963 AZIMUTH MARK

1.0 MILE SOUTHEAST OF PLUMMER, 0.6 MILE EAST ON COUNTY ROAD 1 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOST 340.90, 51.0 FEET NORTH OF COUNTY ROAD 1, 68.0 FEET EAST OF A FIELD ENTRANCE, 53.5 FEET WEST-NORTHWEST OF THE WEST END OF A METAL CULVERT, 52.0 FEET WEST OF A FENCE CORNER, 83.5 FEET EAST OF A PIPELINE POST, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1137.711	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1136.471	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.314 12B = -89.216 09 = -89.153 03 = -89.140

* No Horizontal Positions in the Database *



Mn/DOT Name: ET 1 MES RM 1

NGS Name: ET 1 MES RM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0058](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	151 N	42 W	475420.86	960053.47	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2012	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	REFERENCE MARK DISK	USGS

Description: (2008)

Stamping: NO 1 MES REFERENCE MARK

1.3 MILES SOUTHEAST OF PLUMMER, 0.95 MILE EAST ON COUNTY ROAD 1 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 340.9, 52.0 FEET NORTH OF COUNTY ROAD 1, 258.0 FEET WEST OF A FIELD ENTRANCE, 242.5 FEET WEST OF STATION ET 1 MES, 2.4 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1140.195	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1138.954	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.324 12B = -89.229 09 = -89.166 03 = -89.150

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_1_MES_RM-SL0058-3N-07MAY2008.jpg	N	May 7, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_1_MES_RM-SL0058-2-07MAY2008.jpg		May 7, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_1_MES_RM-SL0058-1-07MAY2008.jpg		May 7, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ET 2 MES

NGS Name: ET 2 MES

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	23	151 N	43 W	475234.00	960744.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1963) **Stamping:** ET 2 MES 1963

3.0 MILES NORTH AND 0.25 MILE EAST OF TERREBONNE, 1.0 MILE NORTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 117, 0.3 MILE EAST OF TERREBONNE, THEN 0.5 MILE NORTH ALONG TRUNK HIGHWAY 92 EAST (COUNTY ROAD 12), THEN 3.0 MILES NORTH ALONG COUNTY ROAD 12, THEN 85.0 FEET EAST ALONG COUNTY ROAD 1, SOUTHEAST OF A TEE-ROAD SOUTH, 48.0 FEET SOUTH OF AN EAST-WEST ROAD, 35.0 FEET EAST OF A NORTH-SOUTH ROAD, 4.0 FEET SOUTH AND 3.0 FEET WEST OF A FENCE CORNER, 8.0 FEET NORTHWEST OF A POWER POLE.

Station Notes

SEE ET 2 MES RESET.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1101.537	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.098 12B = -88.993 09 = -88.940 03 = -88.950

Lat/Lon and County Coordinates (Feet)

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 52 34.35100	96 07 43.62900			.100	3	CLASSICAL SURVEY	1965	USGS-HORZ

State Plane and UTM Coordinates (Feet)

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1256918.834	516518.042			.100	3	CLASSICAL SURVEY	1965	USGS-HORZ



Mn/DOT Name: ET 2 MES AZ MK

NGS Name: ET 2 MES AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO8975](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	151 N	43 W	475221.00	960743.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	USGS

Description: (1963)

Stamping: ET 2 MES AZ MK 1963

2.0 MILES NORTH AND 0.25 MILE EAST OF TERREBONNE, 1.0 MILE NORTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 117 0.3 MILE EAST OF TERREBONNE, THEN 0.5 MILE NORTH ALONG TRUNK HIGHWAY 92 EAST (COUNTY ROAD 12), THEN 2.0 MILES NORTH ALONG COUNTY ROAD 12, THEN 174.0 FEET EAST ALONG 210TH STREET SOUTHEAST, NORTHEAST OF A TEE-ROAD EAST, 30.0 FEET NORTH OF AN EAST-WEST ROAD, 33.0 FEET EAST OF A NORTH-SOUTH ROAD, 1.0 MILE SOUTH OF STATION ET 2 MES.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1087.869	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.045 12B = -88.940 09 = -88.888 03 = -88.894

* No Horizontal Positions in the Database *



Mn/DOT Name: ET 2 MES AZ MK RESET

NGS Name: ET 2 MES AZ MK RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8563](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	26	151 N	43 W	475141.55	960742.22		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (1977)

Stamping: ET 2 MES AZ MK 1963 AZIMUTH MARK RESET 1977

2.0 MILES NORTH OF TERREBONNE, 2.0 MILES NORTH ALONG COUNTY ROAD 2 FROM THE JUNCTION OF COUNTY ROAD 2 AND TRUNK HIGHWAY 92 IN TERREBONNE, 75.0 FEET EAST OF THE CENTER OF COUNTY ROAD 12, 22.5 FEET NORTH OF 210TH STREET SOUTHEAST, 1.0 FOOT WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88							Project Info	
Orthometric Height			Ellipsoid (NAD83)			Determination Method	Year	Reference
Height	Acc	Order (/Class)	Height	Acc	Adj			
1089.673	.262		1000.631	.197	2011	GPS - OPUS	2022	GPSBM
1089.640	.262		1000.598	.197	2011	GPS - OPUS	2022	GPSBM
1089.463	.262		1000.418	.197	2011	GPS - RTRN	2021	RTRN2021
1089.621			1000.589	.020	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1089.621			1000.589	.020	2011	GPS - STATIC	2013	HTERR
1089.630	.131		1000.749	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.042 12B = -88.940 09 = -88.884 03 = -88.891

Lat/Lon and County Coordinates (Feet)

NAD83(2011)							Project Info	
Geodetic Position		Red Lake County		Acc	Order	Determination Method	Year	Reference
Latitude	Longitude	X	Y					
47 51 41.54587	96 07 42.21836	558495.248	232382.930	.131	3	GPS - OPUS	2022	GPSBM
47 51 41.54580	96 07 42.21847	558495.240	232382.923	.131	3	GPS - OPUS	2022	GPSBM
47 51 41.54576	96 07 42.21803	558495.270	232382.919	.131	3	GPS - RTRN	2021	RTRN2021
47 51 41.54597	96 07 42.21779	558495.287	232382.940	.013		ADJUSTMENT	2013	GPS2946
47 51 41.54597	96 07 42.21779	558495.287	232382.940	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)							Project Info	
Geodetic Position		Red Lake County		Acc	Order	Determination Method	Year	Reference
Latitude	Longitude	X	Y					
47 51 41.54559	96 07 42.21881	558495.217	232382.902	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)							Project Info	
MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Year	Reference
X	Y	X	Y					
1881495.353	839252.906	872779.149	17406953.593	.131	3	GPS - OPUS	2022	GPSBM
1881495.346	839252.899	872779.141	17406953.586	.131	3	GPS - OPUS	2022	GPSBM
1881495.375	839252.894	872779.171	17406953.581	.131	3	GPS - RTRN	2021	RTRN2021
1881495.393	839252.914	872779.188	17406953.601	.013		ADJUSTMENT	2013	GPS2946
1881495.393	839252.914	872779.188	17406953.601	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)							Project Info	
MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Year	Reference
X	Y	X	Y					
1881495.322	839252.879	872779.117	17406953.566	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_2_MES_AZ_MK_RESET-DO8563-3E-20OCT2021.jpg	E	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_2_MES_AZ_MK_RESET-DO8563-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ET_2_MES_AZ_MK_RESET-DO8563-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ET 2 MES RESET

NGS Name: ET 2 MES RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1395](#)

[Get Map](#)

NGS Quad / Sta Num : 47096114/

USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	23	151 N	43 W	475234.16	960744.79		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1972	2010	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	SURVEY DISK	USGS

Description: (1977)

Stamping: ET 2 MES 1963 RESET 1972

3.0 MILES NORTH OF TERREBONNE, AT THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 1, 95.0 FEET NORTH OF COUNTY ROAD 1, 30.0 FEET EAST OF COUNTY ROAD 12 EXTENDED, 3.0 FEET SOUTH OF A WITNESS POST.

Station Notes

FOUND THE CONCRETE WITH THE TOP MISSING AND THE REBAR SHOWING.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1102.334	.033	3				VERTICAL CONTROL SURVEY	1977	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1091.861	.262		1003.210	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.098 12B = -88.993 09 = -88.940 03 = -88.950

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 52 34.16332	96 07 44.79361	558303.245	237714.310	.131	3	ADJUSTMENT	1999	17648
47 52 34.15980	96 07 44.79033	558303.469	237713.954	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 52 34.15969	96 07 44.79071	558303.443	237713.943	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 52 34.30754	96 07 43.67867			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1881528.756	844586.908	872819.679	17412289.518	.131	3	ADJUSTMENT	1999	17648
1881528.965	844586.543	872819.888	17412289.153	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1881528.939	844586.533	872819.861	17412289.143	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1256915.278	516513.775			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: ET 2 MES RM

NGS Name: ET 2 MES RM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO8976](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	26	151 N	43 W	475234.00	960745.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	USGS

Description: (1963)

Stamping: ET 2 MES RM 1963

3.0 MILES NORTH OF TERREBONNE, AT THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 1, 146.0 FEET SOUTH OF COUNTY ROAD 1, 35.0 FEET EAST OF COUNTY ROAD 12, 100.0 FEET SOUTH OF STATION ET 2 MES RESET.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1100.431	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -89.098 12B = -88.989 09 = -88.937 03 = -88.947

* No Horizontal Positions in the Database *



Mn/DOT Name: ET 3 MES RM

NGS Name: ET 3 MES RM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO8978](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	149 N	43 W	475221.00	960743.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2010	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 2 IN.	SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

USGS

Description: (1963)

Stamping: RM NO 1 ET 3 MES 1963

6.5 MILES EAST OF MARCOUX, 5.0 MILES SOUTH AND 1.0 MILE EAST OF TERREBONNE, 4.0 MILES SOUTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND COUNTY ROAD 117 0.3 MILE EAST OF TERREBONNE, THEN 1.0 MILE EAST ALONG COUNTY ROAD 209/COUNTY ROAD 49, 97.0 FEET WEST OF STATION ET 3 MES, 39.0 FEET SOUTH OF AN EAST-WEST ROAD, 2.0 FEET NORTH OF THE SOUTH RIGHT-OF-WAY FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1123.633	.033	3				VERTICAL CONTROL SURVEY	1963 USGS-VERT

Geoid Separations(ft): GEOID18 = -88.350 12B = -88.291 09 = -88.179 03 = -88.205

* No Horizontal Positions in the Database *



Mn/DOT Name: ET 4 MES

NGS Name: ET 4 MES

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0087](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	150 N	42 W	474537.83	960004.86	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2012	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 2 IN.	STEEL SPIKE ADJ TO MON

Monument Type

UNKNOWN

Disk Type

SURVEY DISK

Mon. Agency

USGS

Description: (1963)

Stamping: ET 4 MES 1963

3.7 MILES SOUTH OF BROOKS, AT THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 209, AT TRUNK HIGHWAY 59 MILEPOINT 330.60, 111.5 FEET WEST OF TRUNK HIGHWAY 59, 17.0 FEET NORTH OF COUNTY ROAD 209, 10.8 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 6.5 FEET WEST-SOUTHWEST OF A RAILROAD CROSSING POST, ON THE SOUTH COUNTY LINE, 5.7 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1159.266	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1158.095	.016	2				VERTICAL CONTROL SURVEY	1978	L24405
1158.046	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1159.250	.262		1070.946	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -88.697 12B = -88.648 09 = -88.520 03 = -88.530

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 37.82734	96 00 04.85688	589858.400	195648.376	.131	3	ADJUSTMENT	1999	17648
47 45 37.82367	96 00 04.85252	589858.700	195648.005	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 37.82374	96 00 04.85245	589858.704	195648.013	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 45 37.97029	96 00 03.75186			.100	3	CLASSICAL SURVEY	1980	16196
47 45 38.00100	96 00 03.77700			.100	3	CLASSICAL SURVEY	1963	USGS-HORZ



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911274.477	801231.327	902519.206	17368880.364	.131	3	ADJUSTMENT	1999	17648
1911274.760	801230.944	902519.489	17368879.980	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911274.765	801230.951	902519.494	17368879.987	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone							Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1286661.454	473158.278			.100	3	CLASSICAL SURVEY	1980	16196
1286659.854	473161.451			.100	3	CLASSICAL SURVEY	1963	USGS-HORZ



Mn/DOT Name: F 319

NGS Name: F 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0014](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	10	150 N	44 W	474909.00	961717.00	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	1963	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1963) **Stamping:** F 319 1940

3.8 MILES NORTH OF DELORME, 0.6 MILE EAST ALONG TRUNK HIGHWAY 2 EAST FROM THE JUNCTION OF EAST TRUNK HIGHWAY 2 EAST AND TRUNK HIGHWAY 2 WEST 0.3 MILE SOUTH OF DELORME, THEN 0.5 MILE EAST ALONG TRUNK HIGHWAY 2 (COUNTY HIGHWAY 49), THEN 4.0 MILES NORTH ALONG TRUNK HIGHWAY 32 NORTH, THEN 1.0 MILE WEST ALONG COUNTY ROAD 177, THEN 446.0 FEET NORTH ALONG COUNTY ROAD 112.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1046.556	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1045.365	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT
1045.365	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1045.365	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -88.835 12B = -88.766 09 = -88.707 03 = -88.701

* No Horizontal Positions in the Database *



Mn/DOT Name: G 319

NGS Name: G 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0013](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	3	150 N	44 W	474957.28	961718.04	2	C	1940	2019	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2008) **Stamping:** G 319 1940

3.5 MILES SOUTH-SOUTHWEST OF RED LAKE FALLS, 3.35 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 82.10, THEN 1.0 MILE WEST ON COUNTY ROAD 112, 29.0 FEET NORTH OF A ROAD, 87.2 FEET NORTH-NORTHWEST OF A TELEPHONE POLE, 35.8 FEET EAST OF A ROAD, 2.4 FEET SOUTHWEST OF A WITNESS POST.

Station Notes

3PART OF THE CONCRETE AND DISK WERE FOUND MISSING AND CRACKED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1048.456	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1048.574	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR
1048.574	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32
1048.518	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1047.321	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1047.321	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1048.574			959.647	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1048.574			959.647	.010	2011	GPS - STATIC	2013	HTERR
1048.587	.131		959.798	.066	1996	GPS - STATIC	2012	HTERR
			959.647	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			959.762	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1048.522	.131		959.726	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1663
1048.522	.131		959.726	.066	1996	GPS - STATIC	2001	H3986

Geoid Separations(ft): GEOID18 = -88.907 12B = -88.832 09 = -88.779 03 = -88.776

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 57.28438	96 17 18.03678	519238.830	221737.304	.013		ADJUSTMENT	2013	GPS2946
47 49 57.28476	96 17 18.03728	519238.796	221737.342	.013	C	GPS - STATIC	2013	HTERR
47 49 57.28438	96 17 18.03678	519238.830	221737.304	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 57.28431	96 17 18.03789	519238.754	221737.296	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 57.28415	96 17 18.03775	519238.764	221737.280	.033	C	GPS - STATIC	2012	HTERR
47 49 57.28415	96 17 18.03775	519238.764	221737.280	.033	C	ADJUSTMENT	2002	GPS1663
47 49 57.28415	96 17 18.03775	519238.765	221737.280	.033	C	GPS - STATIC	2001	H3986

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1841829.656	830276.500	833085.546	17398025.976	.013		ADJUSTMENT	2013	GPS2946
1841829.624	830276.540	833085.513	17398026.016	.013	C	GPS - STATIC	2013	HTERR
1841829.656	830276.500	833085.546	17398025.976	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1841829.580	830276.496	833085.470	17398025.972	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1841829.589	830276.480	833085.479	17398025.955	.033	C	GPS - STATIC	2012	HTERR
1841829.589	830276.480	833085.479	17398025.955	.033	C	ADJUSTMENT	2002	GPS1663
1841829.589	830276.480	833085.479	17398025.955	.033	C	GPS - STATIC	2001	H3986

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/G_319-SL0013-3NE-12JUN2008.jpg	NE	Jun 12, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/G_319-SL0013-2-12JUN2008.jpg		Jun 12, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/G_319-SL0013-1-12JUN2008.jpg		Jun 12, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GARNES

NGS Name: GARNES

County: RED LAKE, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	5	151 N	41 W	475606.93	955625.71		2

NGS ACRN: [SK1100](#) [Get Map](#)
NGS Quad / Sta Num : 47095444/1038
USGS Quad: OKLEE NW

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1964) **Stamping:** GARNES 1964

5.0 MILES EAST AND 2.0 MILES NORTH OF PLUMMER, 4.1 MILES EAST ON COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND TRUNK HIGHWAY 59 AT THE SOUTH EDGE OF PLUMMER, THEN 2.0 MILES NORTH ON A GRAVEL ROAD THEN 0.25 MILE EAST ON COUNTY ROAD 126, 81.0 FEET SOUTH OF A GRAVEL ROAD, 49.5 FEET SOUTH OF A FENCE, 111.45 FEET SOUTHWEST OF GARNES RM 1, 92.10 FEET SOUTHEAST OF GARNES RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1122.045	.197			1033.013	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

NGVD29				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1122.012							RECIPROCAL VERTICAL ANGLE	1964	HORZ	

Geoid Separations(ft): GEOID18 = -89.491 12B = -89.416 09 = -89.334 03 = -89.304

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 56 06.92829	95 56 25.71488	604479.828	259473.279	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 56 06.92506	95 56 25.70955	604480.193	259472.954	.066	2	ADJUSTMENT	1986	17289

NAD27		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Reference
47 56 07.06075	95 56 24.61340			.100	2	CLASSICAL SURVEY 1964 13522

State Plane and UTM Coordinates (Feet)

NAD83(1996)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order		Year	Reference
1928576.953	864372.887	919910.091	17432018.269	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order		Year	Reference
1928577.304	864372.547	919910.441	17432017.928	.066	2	ADJUSTMENT	1986	17289

NAD27		Determination Method			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Reference
1303963.851	536298.682			.100	2	CLASSICAL SURVEY 1964 13522



Mn/DOT Name: GARNES AZ MK

NGS Name: GARNES AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO9588](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	31	152 N	41 W	475607.12	955743.71		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2012	GOOD	Horz=YES Vert=YES	YES		PROJECTS 6 IN.	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1964) **Stamping:** GARNES AZ MK 1964

4.0 MILES NORTHEAST OF PLUMMER, 4.4 MILES EAST AND NORTH ALONG COUNTY ROAD 126 FROM THE JUNCTION OF COUNTY ROAD 126 AND TRUNK HIGHWAY 59 NORTH OF PLUMMER, 35.5 FEET NORTH OF COUNTY ROAD 126, 23.0 FEET WEST OF A FIELD ENTRANCE EXTENDED, 2.5 FEET SOUTHEAST OF A WITNESS POST, 2.0 FEET WEST OF A SECOND WITNESS POST.

Station Notes

REStamp AND RETAKE PHOTO ONE 7/1/13.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1133.393			1043.945	.023	2011	HORIZONTAL ADJUSTMENT		2013	GPS2946
1133.393			1043.945	.023	2011	GPS - STATIC		2013	HTERR
1133.364	.131		1044.092	.066	1996	GPS - STATIC		2012	HTERR

Geoid Separations(ft): GEOID18 = -89.445 12B = -89.360 09 = -89.288 03 = -89.265

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 07.12308	95 57 43.70802	599168.695	259464.477	.016		ADJUSTMENT	2013	GPS2946
47 56 07.12308	95 57 43.70802	599168.695	259464.477	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 07.12265	95 57 43.70925	599168.612	259464.433	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1923270.915	864588.448	914602.799	17432241.159	.016		ADJUSTMENT	2013	GPS2946
1923270.915	864588.448	914602.799	17432241.159	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1923270.830	864588.407	914602.714	17432241.119	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GARNES_AZ_MK-CO9588-3N-18MAY2010.jpg	N	May 18, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GARNES_AZ_MK-CO9588-2-18MAY2010.jpg		May 18, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GARNES_AZ_MK-CO9588-1-18MAY2010.jpg		May 18, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GARNES RM 1

NGS Name: GARNES RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO9589](#) [Get Map](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	5	151 N	41 W	475607.44	955624.26		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2010	NOT FOUND	Horz=? Vert=YES	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1964) Stamping: GARNES NO 1 1964

5.0 MILES NORTHEAST OF PLUMMER, 5.4 MILES EAST AND NORTH ALONG COUNTY ROAD 126 FROM THE JUNCTION OF COUNTY ROAD 126 AND TRUNK HIGHWAY 59 NORTH OF PLUMMER, 111.45 FEET NORTHEAST OF STATION GARNES, 31.0 FEET SOUTH OF COUNTY ROAD 126, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

APPEARS TO HAVE BEEN REMOVED BY REGRADING OF THE ROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.491 12B = -89.416 09 = -89.334 03 = -89.304



Mn/DOT Name: GARNES RM 2

NGS Name: GARNES RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO9590](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	5	151 N	41 W	475607.40	955626.87		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2010	NOT FOUND	Horz=? Vert=YES	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1964) Stamping: GARNES NO 2 1964

5.0 MILES NORTHEAST OF PLUMMER, 5.4 MILES EAST AND NORTH ALONG COUNTY ROAD 126 FROM THE JUNCTION OF COUNTY ROAD 126 AND TRUNK HIGHWAY 59 NORTH OF PLUMMER, 111.45 FEET NORTHEAST OF GARNES MAIN STATION, 31.0 FEET SOUTH OF COUNTY ROAD 126, 2.0 FEET WEST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.491 12B = -89.416 09 = -89.334 03 = -89.304



Mn/DOT Name: GERLOT

NGS Name: GERLOT

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6408](#)

[Get Map](#)

NGS Quad / Sta Num : 47096113/

USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	10	150 N	43 W	474955.46	960836.33	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2010	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 12 FT)	SURVEY DISK	MNDT

Description: (2008)

Stamping: GERLOT 2008

0.5 MILE WEST OF TERREBONNE, 0.25 MILE WEST ALONG TRUNK HIGHWAY 92 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 SOUTH IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 5.75, 79.1 FEET SOUTH OF TRUNK HIGHWAY 92, 56.1 FEET EAST OF A FIELD ENTRANCE, 5.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1090.031	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1090.155	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1090.129			1001.271	.013	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1090.129			1001.271	.013	2011	GPS - STATIC	2013	HTERR
1090.155	.131		1001.435	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.868 12B = -88.773 09 = -88.714 03 = -88.720

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 55.45598	96 08 36.32779	554836.390	221621.470	.016		ADJUSTMENT	2013	GPS2946
47 49 55.45598	96 08 36.32779	554836.390	221621.470	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 55.45558	96 08 36.32878	554836.323	221621.429	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1877385.678	828657.081	868653.957	17396359.243	.016		ADJUSTMENT	2013	GPS2946
1877385.678	828657.081	868653.957	17396359.243	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1877385.609	828657.043	868653.887	17396359.205	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GERLOT-DO6408-3S-29JUN2010.jpg	S	Jun 29, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GERLOT-DO6408-2-29JUN2010.jpg		Jun 29, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GERLOT-DO6408-1-29JUN2010.jpg		Jun 29, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GESON

NGS Name: GESON

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6429](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	35	151 N	41 W	475054.10	955132.30	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2012	GOOD	Horz=NO Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	SURVEY DISK	MNDT

Description: (2008) Stamping: GESON 2008

0.5 MILE NORTH OF OKLEE, 0.6 MILE NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND 2ND AVENUE IN OKLEE, 85.6 FEET WEST OF COUNTY ROAD 5, 85.4 FEET NORTH OF 220TH SOUTHEAST, 11.3 FEET SOUTH-SOUTHEAST OF A POWER POLE, 5.9 FEET NORTH-NORTHEAST OF A POWER POLE, 7.7 FEET EAST OF A WITNESS POST.

Station Notes

OVERHEAD POWER LINES. MAY NOT BE SUITABLE FOR GPS WITH 2 POLES CLOSE BY. APPEARS THE POLES WERE SET IN 2009.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1147.514	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1147.606	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Geoid Separations(ft): GEOID18 = -89.439 12B = -89.393 09 = -89.304 03 = -89.239

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GESON-DO6429-3E-29JUN2010.jpg	E	Jun 29, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GESON-DO6429-2-29JUN2010.jpg		Jun 29, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GESON-DO6429-1-29JUN2010.jpg		Jun 29, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GLENCOR

NGS Name: GLENCOR

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8546](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	19	151 N	42 W	475234.62	960544.32		C	2008	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: GLENCOR 2008

3.4 MILES SOUTHWEST OF PLUMMER, 2.1 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, THEN 3.6 MILES WEST ON COUNTY ROAD 20 (200TH STREET SOUTHEAST), 184.8 FEET EAST OF THE EAST END OF A CORRUGATED METAL PIPE, 162.2 FEET NORTHEAST OF THE NORTH END OF A CORRUGATED METAL PIPE, 62.0 FEET NORTH OF COUNTY ROAD 20, 61.3 FEET WEST OF A POWER POLE, 1.7 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1112.150	.262		1023.023	.197	2011	GPS - OPUS	2022	GPSBM
1112.189	.262		1023.062	.197	2011	GPS - OPUS	2022	GPSBM
1111.979	.262		1022.849	.197	2011	GPS - RTRN	2021	RTRN2021
1112.140			1023.026	.019	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1112.140			1023.026	.019	2011	GPS - STATIC	2013	HTERR
1112.170	.131		1023.184	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.130 12B = -89.022 09 = -88.970 03 = -88.970

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.61945	96 05 44.31545	566516.586	237787.554	.131	3	GPS - OPUS	2022	GPSBM
47 52 34.61945	96 05 44.31556	566516.579	237787.554	.131	3	GPS - OPUS	2022	GPSBM
47 52 34.62011	96 05 44.31438	566516.659	237787.621	.131	3	GPS - RTRN	2021	RTRN2021
47 52 34.61980	96 05 44.31490	566516.624	237787.589	.016		ADJUSTMENT	2013	GPS2946
47 52 34.61980	96 05 44.31490	566516.624	237787.589	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.61941	96 05 44.31593	566516.553	237787.550	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1889736.737	844313.129	881030.261	17412004.657	.131	3	GPS - OPUS	2022	GPSBM
1889736.729	844313.130	881030.253	17412004.658	.131	3	GPS - OPUS	2022	GPSBM
1889736.812	844313.193	881030.336	17412004.721	.131	3	GPS - RTRN	2021	RTRN2021
1889736.776	844313.163	881030.300	17412004.691	.016		ADJUSTMENT	2013	GPS2946
1889736.776	844313.163	881030.300	17412004.691	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1889736.704	844313.126	881030.228	17412004.654	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GLENCOR-DO8546-3N-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GLENCOR-DO8546-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GLENCOR-DO8546-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: GOP MNDT

NGS Name: GOP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1377](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	150 N	42 W	474905.40	960418.39		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2008	POOR	Horz=? Vert=YES	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
OBJECT DRIVEN INTO THE GROUND	METAL ROD	MNDT

Description: (1977)

Stamping: GOP 1977

3.2 MILES WEST-NORTHWEST OF BROOKS, 3.1 MILES WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 AT BROOKS, THEN 0.15 MILE WEST ON COUNTY ROAD 117, 19.0 FEET NORTH OF A GRAVEL ROAD, 13.0 FEET EAST OF AN ENTRANCE, 84.0 FEET EAST OF THE WEST ENTRANCE, 88.09 FEET SOUTHEAST OF A MINNESOTA DEPARTMENT OF TRANSPORTATION NAIL AND DISK IN A POWER POLE.

Station Notes

2008: FOUND BENT, APPEARS TO HAVE BEEN HIT BY A GRADER.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1115.483	.197		1027.094	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1114.105						LEVELING	1977	HORZ

Geoid Separations(ft): GEOID18 = -88.809 12B = -88.747 09 = -88.658 03 = -88.638

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.39880	96 04 18.38704	572455.555	216608.035	.066	2	ADJUSTMENT	1999	17648
47 49 05.39650	96 04 18.38239	572455.873	216607.803	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.39639	96 04 18.38144	572455.938	216607.792	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 49 05.52910	96 04 17.24483			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1894774.927	822904.539	886041.976	17390581.921	.066	2	ADJUSTMENT	1999	17648
1894775.235	822904.294	886042.284	17390581.676	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1894775.299	822904.280	886042.348	17390581.662	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1270163.774	494830.013			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: GREENS

NGS Name: GREENS

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8544](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	151 N	41 W	475600.90	955017.39		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
METAL ROD DRIVEN IN GROUND (<10 FT) (DEPTH 9 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: GREENS 2008

6.5 MILES NORTHEAST OF OKLEE, 4.6 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND TRUNK HIGHWAY 222 IN OKLEE, THEN 1.0 MILE EAST ON COUNTY ROAD 1, THEN 1.9 MILES NORTH ON COUNTY ROAD 133 (300TH AVENUE SOUTHEAST), 68.5 FEET SOUTH OF A POWER POLE, 45.5 FEET WEST OF COUNTY ROAD 133 (300TH AVENUE SOUTHEAST), 35.4 FEET SOUTH OF A DRIVEWAY, 22.0 FEET SOUTHEAST OF A CORRUGATED METAL PIPE THROUGH A DRIVEWAY, 2.5 FEET EAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1148.105	.262		1058.361	.197	2011	GPS - OPUS	2020	GPSBM
1148.065	.262		1058.321	.197	2011	GPS - OPUS	2020	GPSBM
1147.941	.262		1058.233	.197	2011	GPS - RTRN	2020	RTRN2020
1148.052			1058.275	.026	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1148.052			1058.275	.026	2011	GPS - STATIC	2013	HTERR
1147.964	.131		1058.403	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.744 12B = -89.705 09 = -89.609 03 = -89.544

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 00.90265	95 50 17.38910	629565.438	259017.586	.131	3	GPS - OPUS	2020	GPSBM
47 56 00.90269	95 50 17.38907	629565.440	259017.590	.131	3	GPS - OPUS	2020	GPSBM
47 56 00.90398	95 50 17.38895	629565.448	259017.720	.131	3	GPS - RTRN	2020	RTRN2020
47 56 00.90278	95 50 17.38853	629565.477	259017.599	.016		ADJUSTMENT	2013	GPS2946
47 56 00.90278	95 50 17.38853	629565.477	259017.599	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 00.90248	95 50 17.38951	629565.410	259017.568	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1953617.494	862857.990	944955.249	17430468.740	.131	3	GPS - OPUS	2020	GPSBM
1953617.496	862857.994	944955.251	17430468.744	.131	3	GPS - OPUS	2020	GPSBM
1953617.509	862858.125	944955.264	17430468.875	.131	3	GPS - RTRN	2020	RTRN2020
1953617.533	862858.002	944955.288	17430468.752	.016		ADJUSTMENT	2013	GPS2946
1953617.533	862858.002	944955.288	17430468.752	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1953617.466	862857.974	944955.221	17430468.724	.033	C	GPS - STATIC	2012	HTERR



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>		
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GREENS-DO8544-3W-16JUN2020.jpg	W	Jun 16, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GREENS-DO8544-2-16JUN2020.jpg		Jun 16, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/GREENS-DO8544-1-16JUN2020.jpg		Jun 16, 2020
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: H 319

NGS Name: H 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0012](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	34	151 N	44 W	475049.72	961717.62	2	C	1940	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2008)

Stamping: H 319 1940

2.5 MILES SOUTH-SOUTHWEST OF RED LAKE FALLS, 2.35 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS TO TRUNK HIGHWAY 32 MILEPOINT 83.10, THEN 1.0 MILE WEST ON 220TH STREET SOUTHWEST, 29.0 FEET NORTH OF 220TH STREET SOUTHWEST, 38.0 FEET EAST OF 110TH AVENUE SOUTHWEST, 1.6 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1041.976	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1042.029	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1042.104	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1042.226	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR
1042.226	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32
1041.976	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1040.769	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1040.769	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1040.769	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1042.242	.262		953.259	.197	2011	GPS - OPUS	2020	GPSBM
1042.354	.262		953.453	.197	2011	GPS - RTRN	2020	RTRN2020
1042.130	.262		953.230	.197	2011	GPS - RTRN	2018	RTRN2018
1042.226			953.217	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1042.226			953.213	.011	2011	GPS - STATIC	2013	HTERR
1042.222	.131		953.374	.066	1996	GPS - STATIC	2012	HTERR
			953.217	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			953.331	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1042.157	.131		953.295	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1663
1042.157	.131		953.295	.066	1996	GPS - STATIC	2001	H3986

Geoid Separations(ft): GEOID18 = -88.979 12B = -88.897 09 = -88.848 03 = -88.852

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 50 49.72085	96 17 17.62091	519261.813	227050.908	.131	3	GPS - OPUS	2020	GPSBM
47 50 49.72025	96 17 17.62082	519261.819	227050.847	.131	3	GPS - RTRN	2020	RTRN2020
47 50 49.72067	96 17 17.62024	519261.859	227050.890	.131	3	GPS - RTRN	2018	RTRN2018
47 50 49.72068	96 17 17.61929	519261.924	227050.891	.010		ADJUSTMENT	2013	GPS2946
47 50 49.72082	96 17 17.61958	519261.904	227050.905	.010	C	GPS - STATIC	2013	HTERR
47 50 49.72068	96 17 17.61929	519261.924	227050.891	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 50 49.72061	96 17 17.62040	519261.848	227050.884	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 50 49.72046	96 17 17.62027	519261.857	227050.869	.033	C	GPS - STATIC	2012	HTERR
47 50 49.72046	96 17 17.62027	519261.857	227050.869	.033	C	ADJUSTMENT	2002	GPS1663
47 50 49.72046	96 17 17.62027	519261.858	227050.868	.033	C	GPS - STATIC	2001	H3986

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1842077.071	835583.664	833340.067	17403335.150	.131	3	GPS - OPUS	2020	GPSBM
1842077.075	835583.603	833340.071	17403335.089	.131	3	GPS - RTRN	2020	RTRN2020
1842077.116	835583.644	833340.112	17403335.130	.131	3	GPS - RTRN	2018	RTRN2018
1842077.181	835583.642	833340.177	17403335.128	.010		ADJUSTMENT	2013	GPS2946
1842077.162	835583.658	833340.158	17403335.143	.010	C	GPS - STATIC	2013	HTERR
1842077.181	835583.642	833340.177	17403335.128	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1842077.105	835583.639	833340.101	17403335.124	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1842077.113	835583.623	833340.109	17403335.109	.033	C	GPS - STATIC	2012	HTERR
1842077.113	835583.623	833340.109	17403335.109	.033	C	ADJUSTMENT	2002	GPS1663
1842077.113	835583.623	833340.109	17403335.108	.033	C	GPS - STATIC	2001	H3986

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/H_319-SL0012-3N-16JUN2020.jpg	N	Jun 16, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/H_319-SL0012-2-16JUN2020.jpg		Jun 16, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/H_319-SL0012-1-16JUN2020.jpg		Jun 16, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: H=1092 USGS

NGS Name: 1092

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	150 N	44 W	474627.90	961718.58	3	

NGS ACRN:	SL0017	Get Map
NGS Quad / Sta Num :	47096142/	
USGS Quad:	MARCOUX CORNERS	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1906	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	PIPE CAP	USGS

Description: (1940)

Stamping: 1092

0.7 MILE NORTH-NORTHEAST OF DELORME, 308.0 FEET EAST OF THE JUNCTION OF COUNTY ROAD 7. 96 AND 110TH AVENUE SOUTHWEST 0.7 MILE NORTH OF DELORME, 0.5 MILE NORTH ON A RAILROAD FROM DELORME, 395.0 FEET SOUTH OF RAILROAD MILEPOST 62, AT A FARM ROAD CROSSING, 29.6 FEET WEST OF THE WEST RAIL OF A RAILROAD, 13.0 FEET SOUTH OF A ROAD, 28.4 FEET NORTHEAST OF THE NORTH END OF A SNOW FENCE, 1.2 FEET EAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1058.577	.033	3				VERTICAL CONTROL SURVEY	1992	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1090.208	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1090.208	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT
1090.208	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1090.208	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -88.514 12B = -88.468 09 = -88.399 03 = -88.382

* No Horizontal Positions in the Database *



Mn/DOT Name: HARMON 18

NGS Name: HARMON 18

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8558](#)
NGS Quad / Sta Num : 47096144/
USGS Quad: DOROTHY

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	14	151 N	45 W	475327.21	962336.88		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
METAL ROD DRIVEN IN GROUND (<10 FT) (DEPTH 7 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: HARMON 18 2008

5.2 MILES WEST OF RED LAKE FALLS, 4.8 MILES WEST ALONG COUNTY ROAD 13 FROM THE JUNCTION OF COUNTY ROAD 13 AND TRUNK HIGHWAY 32 IN RED LAKE FALLS, THEN 2.9 MILES WEST OF COUNTY ROAD 18 (180TH STREET SOUTHWEST), 70.2 FEET NORTH OF COUNTY ROAD 18, 154.0 FEET SOUTHEAST OF A POWER POLE, 61.3 FEET EAST OF A DRIVEWAY, 2.3 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
975.959	.262		886.927	.197	2011	GPS - OPUS	2022	GPSBM
975.959	.262		886.927	.197	2011	GPS - OPUS	2022	GPSBM
975.851	.262		886.816	.197	2011	GPS - RTRN	2021	RTRN2021
975.913			886.875	.031	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
975.913			886.875	.031	2011	GPS - STATIC	2013	HTERR
975.917	.131		886.990	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.035 12B = -88.927 09 = -88.917 03 = -88.934

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.21365	96 23 36.88548	493396.745	243001.687	.131	3	GPS - OPUS	2022	GPSBM
47 53 27.21336	96 23 36.88555	493396.740	243001.657	.131	3	GPS - OPUS	2022	GPSBM
47 53 27.21325	96 23 36.88458	493396.807	243001.646	.131	3	GPS - RTRN	2021	RTRN2021
47 53 27.21414	96 23 36.88392	493396.851	243001.736	.020		ADJUSTMENT	2013	GPS2946
47 53 27.21414	96 23 36.88392	493396.851	243001.736	.020	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.21387	96 23 36.88492	493396.783	243001.709	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1816912.415	852610.607	808186.563	17420403.690	.131	3	GPS - OPUS	2022	GPSBM
1816912.409	852610.578	808186.557	17420403.661	.131	3	GPS - OPUS	2022	GPSBM
1816912.474	852610.564	808186.622	17420403.647	.131	3	GPS - RTRN	2021	RTRN2021
1816912.523	852610.652	808186.671	17420403.735	.020		ADJUSTMENT	2013	GPS2946
1816912.523	852610.652	808186.671	17420403.735	.020	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1816912.454	852610.627	808186.602	17420403.711	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HARMON_18-DO8558-3N-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HARMON_18-DO8558-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HARMON_18-DO8558-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: HIVE

NGS Name: HIVE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DP0867](#)

[Get Map](#)

NGS Quad / Sta Num : 47096113/

USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	32	150 N	43 W	474535.03	961122.29		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2013)

Stamping: HIVE 2010

5.5 MILES SOUTH SOUTH-WEST OF TERREBONNE, 4.1 MILES NORTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND TRUNK HIGHWAY 2 IN TERREBONNE, THENCE 2.35 MILES WEST ON COUNTY ROAD 49, 27.8 FEET NORTH OF COUNTY ROAD 49, 17.0 FEET WEST OF A FIELD ENTRANCE, 36.5 FEET SOUTHEAST OF THE WEST END OF A 14.0 INCH DIAMETER REINFORCED CONCRETE PIPE, 800.0 FEET EAST OF DRIVEWAY NUMBER 13428, 34.3 FEET SOUTH-SOUTHEAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1115.254	.262		1026.983	.197	2011	GPS - OPUS	2022	GPSBM
1115.270	.262		1026.999	.197	2011	GPS - OPUS	2022	GPSBM
1115.149	.262		1026.878	.197	2011	GPS - RTRN	2021	RTRN2021
1115.195			1026.953	.024	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1115.224	.131		1027.068	.066	1996	GPS - STATIC	2013	HPLK1
1115.195			1026.953	.024	2011	GPS - STATIC	2013	HPLK1

Geoid Separations(ft): GEOID18 = -88.271 12B = -88.231 09 = -88.126 03 = -88.136

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 35.03264	96 11 22.28899	543572.982	195202.756	.131	3	GPS - OPUS	2022	GPSBM
47 45 35.03286	96 11 22.28896	543572.984	195202.779	.131	3	GPS - OPUS	2022	GPSBM
47 45 35.03362	96 11 22.28801	543573.049	195202.856	.131	3	GPS - RTRN	2021	RTRN2021
47 45 35.03358	96 11 22.28816	543573.039	195202.852	.023		ADJUSTMENT	2013	GPS2970
47 45 35.03358	96 11 22.28816	543573.039	195202.852	.023	C	GPS - STATIC	2013	HPLK1

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 35.03317	96 11 22.28921	543572.967	195202.810	.033	C	GPS - STATIC	2013	HPLK1

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1865017.890	802741.353	856248.014	17370449.407	.131	3	GPS - OPUS	2022	GPSBM
1865017.893	802741.375	856248.017	17370449.429	.131	3	GPS - OPUS	2022	GPSBM
1865017.961	802741.449	856248.085	17370449.503	.131	3	GPS - RTRN	2021	RTRN2021
1865017.950	802741.446	856248.075	17370449.500	.023		ADJUSTMENT	2013	GPS2970
1865017.950	802741.446	856248.075	17370449.500	.023	C	GPS - STATIC	2013	HPLK1

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1865017.877	802741.407	856248.001	17370449.461	.033	C	GPS - STATIC	2013	HPLK1



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HIVE-DP0867-3N-20OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HIVE-DP0867-2-20OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HIVE-DP0867-1-20OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 20, 2021
	Oct 20, 2021
	Oct 20, 2021



Mn/DOT Name: HUOT MNDT

NGS Name: HUOT

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AJ8462](#)

[Get Map](#)

NGS Quad / Sta Num : 47096114/

USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	13	151 N	44 W	475326.25	961445.68	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1998	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (1998)

Stamping: HUOT 1998

1.0 MILE NORTHEAST OF RED LAKE FALLS, 1.05 MILES NORTHEAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 13, AT TRUNK HIGHWAY 32 MILEPOINT 87.40, AT THE NORTHEAST EDGE OF RED LAKE FALLS, 60.0 FEET NORTHWEST OF TRUNK HIGHWAY 32, 15.2 FEET SOUTHEAST OF A FENCE, 51.8 FEET EAST-SOUTHEAST OF A RIGHT-OF-WAY POST, 3.0 FEET WEST-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
997.511	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
997.511	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
997.564	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
997.685	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
997.485	.262		908.348	.197	2011	GPS - RTRN	2019	RTRN2019
997.685			908.561	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
997.685			908.551	.014	2011	GPS - STATIC	2013	HTERR
997.701	.131		908.660	.066	1996	GPS - STATIC	2012	HTERR
			908.561	.011	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			908.676	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
997.669	.131		908.640	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1663
997.669	.131		908.640	.066	1996	GPS - STATIC	2001	H3986

Geoid Separations(ft): GEOID18 = -89.137 12B = -89.016 09 = -88.993 03 = -89.025

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 53 26.25070	96 14 45.68147	529601.232	242926.059	.131	3	GPS - RTRN	2019	RTRN2019
47 53 26.25228	96 14 45.67799	529601.470	242926.220	.013		ADJUSTMENT	2013	GPS2946
47 53 26.25214	96 14 45.67794	529601.473	242926.206	.013	C	GPS - STATIC	2013	HTERR
47 53 26.25228	96 14 45.67799	529601.470	242926.220	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 53 26.25222	96 14 45.67904	529601.398	242926.214	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 53 26.25214	96 14 45.67893	529601.405	242926.205	.033	C	GPS - STATIC	2012	HTERR
47 53 26.25214	96 14 45.67893	529601.405	242926.205	.033	C	ADJUSTMENT	2002	GPS1663
47 53 26.25214	96 14 45.67893	529601.405	242926.207	.033	C	GPS - STATIC	2001	H3986

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1853076.442	851005.719	844364.789	17418749.121	.131	3	GPS - RTRN	2019	RTRN2019
1853076.685	851005.869	844365.033	17418749.271	.013		ADJUSTMENT	2013	GPS2946
1853076.688	851005.855	844365.036	17418749.257	.013	C	GPS - STATIC	2013	HTERR
1853076.685	851005.869	844365.033	17418749.271	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1853076.613	851005.866	844364.961	17418749.268	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1853076.621	851005.858	844364.968	17418749.260	.033	C	GPS - STATIC	2012	HTERR
1853076.621	851005.858	844364.968	17418749.260	.033	C	ADJUSTMENT	2002	GPS1663
1853076.621	851005.858	844364.968	17418749.259	.033	C	GPS - STATIC	2001	H3986

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HUOT-AJ8462-3W-09OCT2019.jpg	W	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HUOT-AJ8462-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/HUOT-AJ8462-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: INGOT

NGS Name: INGOT

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6413](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	8	150 N	42 W	474922.89	960425.80	2	C	2010	2010	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: INGOT 2010

3.7 MILES WEST OF BROOKS, 3.7 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 9.30, 44.1 FEET NORTHEAST OF TRUNK HIGHWAY 92, 21.5 FEET SOUTH OF AN ENTRANCE, 42.1 FEET WEST-SOUTHWEST OF A GUYED POWER POLE, 2.5 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1114.827	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1114.965	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1114.972			1026.113	.010	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1114.972			1026.113	.010	2011	GPS - STATIC	2013 HTERR
1114.958	.131		1026.297	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -88.838 12B = -88.773 09 = -88.687 03 = -88.668

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 22.88975	96 04 25.80274	571942.717	218378.514	.013		ADJUSTMENT	2013	GPS2946
47 49 22.88975	96 04 25.80274	571942.717	218378.514	.013	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 22.88928	96 04 25.80377	571942.647	218378.466	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1894337.406	824694.858	885606.634	17392373.431	.013		ADJUSTMENT	2013	GPS2946
1894337.406	824694.858	885606.634	17392373.431	.013	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1894337.334	824694.814	885606.562	17392373.386	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/INGOT-DO6413-3NE-21JUL2010.jpg	NE	Jul 21, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/INGOT-DO6413-2-21JUL2010.jpg		Jul 21, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/INGOT-DO6413-1-21JUL2010.jpg		Jul 21, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ISAAC MNDT

NGS Name: ISAAC

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1392](#)

[Get Map](#)

NGS Quad / Sta Num : 47096114/

USGS Quad: PLUMMER NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	36	152 N	44 W	475601.76	961326.52	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 0 IN.	MARKER W/BAR MAGNET

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

HORIZONTAL CONTROL DISK

Mon. Agency

MNDT

Description: (2008)

Stamping: ISAAC 1977

4.25 MILES NORTHEAST OF RED LAKE FALLS, 5.0 MILES NORTHEAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 13 AT THE NORTHEAST EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 90.95, 4.65 MILES NORTHEAST ON TRUNK HIGHWAY 32 FROM TRUNK HIGHWAY 32 BRIDGE OVER THE CLEARWATER RIVER, 107.8 FEET WEST OF TRUNK HIGHWAY 32, 15.0 FEET NORTH OF A GRAVEL ROAD, 13.0 FEET WEST OF AN OLD RAILROAD GRADE, 39.43 FEET SOUTHEAST OF STATION N 319, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1074.037	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1074.037	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1074.037	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1074.168	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1073.892	.262		984.703	.197	2011	GPS - RTRN	2019	RTRN2019
1074.168			985.034	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1074.168			984.998	.011	2011	GPS - STATIC	2013	HTERR
1074.178	.131		985.073	.066	1996	GPS - STATIC	2012	HTERR
			985.034	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1074.056	.262		984.962	.197	1996	GPS - RTRN	2008	RTRN2008
			985.149	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1074.210	.131		985.113	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1663
1074.210	.131		985.113	.066	1996	GPS - STATIC	2001	H3986
1072.832	.197		984.076	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1072.800						LEVELING	1977	HORZ

Geoid Separations(ft): GEOID18 = -89.193 12B = -89.048 09 = -89.042 03 = -89.094



Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 01.75696	96 13 26.52302	534967.237	258693.449	.131	3	GPS - RTRN	2019	RTRN2019
47 56 01.75686	96 13 26.51892	534967.516	258693.439	.010		ADJUSTMENT	2013	GPS2946
47 56 01.75684	96 13 26.51900	534967.511	258693.437	.010	C	GPS - STATIC	2013	HTERR
47 56 01.75686	96 13 26.51892	534967.516	258693.439	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 01.75679	96 13 26.51992	534967.448	258693.432	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 01.75676	96 13 26.51982	534967.455	258693.429	.033	C	GPS - STATIC	2012	HTERR
47 56 01.75674	96 13 26.51937	534967.486	258693.427	.131	3	GPS - RTRN	2008	RTRN2008
47 56 01.75676	96 13 26.51982	534967.455	258693.429	.033	C	ADJUSTMENT	2002	GPS1663
47 56 01.75676	96 13 26.51982	534967.454	258693.429	.033	C	GPS - STATIC	2001	H3986
47 56 01.75831	96 13 26.52143	534967.345	258693.586	.066	2	ADJUSTMENT	1999	17648
47 56 01.75521	96 13 26.51550	534967.750	258693.273	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 01.75523	96 13 26.51450	534967.818	258693.275	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 56 01.87306	96 13 25.35438			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859102.966	866530.210	850414.998	17434271.802	.131	3	GPS - RTRN	2019	RTRN2019
1859103.244	866530.189	850415.277	17434271.780	.010		ADJUSTMENT	2013	GPS2946
1859103.239	866530.187	850415.272	17434271.778	.010	C	GPS - STATIC	2013	HTERR
1859103.244	866530.189	850415.277	17434271.780	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859103.176	866530.184	850415.209	17434271.776	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859103.183	866530.181	850415.216	17434271.772	.033	C	GPS - STATIC	2012	HTERR
1859103.214	866530.178	850415.246	17434271.769	.131	3	GPS - RTRN	2008	RTRN2008
1859103.183	866530.181	850415.216	17434271.772	.033	C	ADJUSTMENT	2002	GPS1663
1859103.183	866530.181	850415.216	17434271.772	.033	C	GPS - STATIC	2001	H3986
1859103.080	866530.342	850415.112	17434271.934	.066	2	ADJUSTMENT	1999	17648
1859103.470	866530.012	850415.503	17434271.603	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859103.539	866530.011	850415.571	17434271.603	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1234492.224	538453.972			.100	2	CLASSICAL SURVEY	1978	16128



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ISAAC-SL1392-3N-09OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ISAAC-SL1392-2-09OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ISAAC-SL1392-1-09OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 9, 2019
	Oct 9, 2019
	Oct 9, 2019



Mn/DOT Name: ISAAC MNDT RM 1

NGS Name: ISAAC RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CO9828](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	151 N	44 W	475600.95	961326.87		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2010	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1977) Stamping: ISAAC NO 1 1977

5.0 MILES NORTHEAST OF RED LAKE FALLS, 4.65 MILES NORTHEAST ON TRUNK HIGHWAY 32 FROM A TRUNK HIGHWAY 32 BRIDGE OVER THE CLEARWATER RIVER, AT TRUNK HIGHWAY 32 MILEPOINT 90.95, 66.0 FEET SOUTH OF A GRAVEL ROAD, 34.8 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 52.1 FEET SOUTH-SOUTHWEST OF A RAILROAD CROSSING SIGNPOST, 3.1 FEET EAST OF A TELEGRAPH POLE, 84.4 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Station Notes

FALLS IN A FIELD NOW.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.193 12B = -89.048 09 = -89.042 03 = -89.094



Mn/DOT Name: IVES

NGS Name: IVES

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1441](#) [Get Map](#)
NGS Quad / Sta Num : 47096144/1002
USGS Quad: DOROTHY

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	32	152 N	45 W	475614.32	962712.71		1

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1906	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
PIPE (TILE OR CLAY) FILLED WITH CONCRETE	NAIL	NGS

Description: (2007)

Stamping:

0.7 MILE NORTH-NORTHWEST OF DOROTHY, 0.8 MILE NORTH-NORTHWEST ALONG COUNTY HIGHWAY 3 FROM THE JUNCTION OF COUNTY HIGHWAY 3.

Station Notes

SEE THE NATIONAL GEODETIC SURVEY (NGS) DATASHEETS FOR A DETAILED DESCRIPTION. (07-10-2007)

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1006.232	.131		917.728	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1004.985						RECIPROCAL VERTICAL ANGLE	1906	HORZ

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.852 03 = -88.874

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 14.32035	96 27 12.71251	478706.033	259946.268	.033	1	ADJUSTMENT	1999	17648
47 56 14.31866	96 27 12.70747	478706.376	259946.096	.033	1	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 14.31794	96 27 12.70455	478706.575	259946.023	.033	1	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 56 14.41900	96 27 11.50100			.100	1	CLASSICAL SURVEY	1928	00155

USSD

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 56 14.66700	96 27 11.87600				3	CLASSICAL SURVEY		17389-73

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1802952.589	870158.306	794243.865	17437979.324	.033	1	ADJUSTMENT	1999	17648
1802952.924	870158.120	794244.201	17437979.138	.033	1	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1802953.119	870158.038	794244.396	17437979.056	.033	1	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1178342.940	542080.009			.100	1	CLASSICAL SURVEY	1928	00155



Mn/DOT Name: IVES 2

NGS Name: IVES 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4518](#) [Get Map](#)
NGS Quad / Sta Num : 47096144/
USGS Quad: DOROTHY

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u> <u>Sec</u> <u>Twp</u> <u>Rng</u>				
SW 32 152 N 45 W	475610.71	962710.78		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1978	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	CGS

Description: (1964) Stamping: IVES 2 1964

0.6 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ALONG COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13 NORTH OF DOROTHY, 68.0 FEET EAST OF COUNTY ROAD 3, 67.0 FEET NORTHWEST OF THE NORTHWEST EDGE OF AN OLD GRAVEL PIT, 36.0 FEET EAST OF A WIRE FENCE, 35.5 FEET EAST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.848 03 = -88.871



Mn/DOT Name: IVES 2 AZ MK

NGS Name: IVES 2 AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4733](#)
NGS Quad / Sta Num : 47096144/
USGS Quad: DOROTHY

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	32	152 N	45 W	475631.00	962713.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1978	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	CGS

Description: (1964)

Stamping: IVES 2 1964

1.1 MILES NORTHWEST OF DOROTHY, 0.7 MILE NORTH ALONG COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13 NORTH OF DOROTHY, 35.0 FEET EAST OF COUNTY ROAD 3, 2.0 FEET SOUTHWEST OF A FENCE CORNER POST, 2.5 FEET SOUTHWEST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.976 12B = -88.884 09 = -88.865 03 = -88.891



Mn/DOT Name: IVES 2 AZ MK 2

NGS Name: IVES 2 AZ MK 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4818](#) [Get Map](#)
NGS Quad / Sta Num : 47096144/1002
USGS Quad: DOROTHY

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u> <u>Sec</u> <u>Twp</u> <u>Rng</u>				
SW 32 152 N 45 W	475630.00	962713.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1982	1982	GOOD	Horz=? Vert=YES	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1982)

Stamping: IVES 2 1964 NO 2 1982

1.0 MILE NORTHWEST OF DOROTHY, 0.6 MILE NORTH ON COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3
AND COUNTY ROAD 13, 58.7 FEET EAST OF COUNTY ROAD 3, 2.6 FEET NORTH OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.976 12B = -88.884 09 = -88.861 03 = -88.891



Mn/DOT Name: IVES 2 RESET

NGS Name: IVES 2 RESET

County: RED LAKE, MN (Sheet 1)

<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>	NGS ACRN: SL1440	Get Map
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>
SW	32	152 N	45 W	475610.71	962710.79
					C

NGS Quad / Sta Num : 47096144/1002
USGS Quad: DOROTHY

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1982	2020	GOOD	Horz=YES Vert=YES	YES		PROJECTS 2 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2008) Stamping: IVES 2 1964 1982

0.5 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ON COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13, 61.5 FEET EAST OF COUNTY ROAD 3, 57.0 FEET NORTHEAST OF IVES 2 RM 4, 1.8 FEET SOUTH OF A WITNESS POST.

Station Notes

THE CONCRETE IS CHIPPED ON THE MONUMENT, BUT THE MARK IS STABLE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1001.081	.262		912.121	.197	2011	GPS - OPUS	2020 GPSBM
1001.074	.262		912.114	.197	2011	GPS - OPUS	2020 GPSBM
1000.992	.262		912.124	.197	2011	GPS - RTRN	2020 RTRN2020
1000.995			912.045	.027	2011	HORIZONTAL ADJUSTMENT	2013 GPS2975
1000.995			912.045	.027	2011	GPS - STATIC	2013 HPLK2
1001.048	.131		912.160	.066	1996	GPS - STATIC	2012 HPLK2
1003.935	.131		915.435	.066	1996	HORIZONTAL ADJUSTMENT	1999 17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1003.902						RECIPROCAL VERTICAL ANGLE	1964 HORZ

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.852 03 = -88.871

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 10.70707	96 27 10.78513	478836.868	259579.967	.131	3	GPS - OPUS	2020	GPSBM
47 56 10.70689	96 27 10.78499	478836.878	259579.949	.131	3	GPS - OPUS	2020	GPSBM
47 56 10.70762	96 27 10.78496	478836.880	259580.023	.131	3	GPS - RTRN	2020	RTRN2020
47 56 10.70752	96 27 10.78427	478836.927	259580.013	.023		ADJUSTMENT	2013	GPS2975
47 56 10.70752	96 27 10.78427	478836.927	259580.013	.023	C	GPS - STATIC	2013	HPLK2

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 10.70707	96 27 10.78520	478836.863	259579.967	.033	C	GPS - STATIC	2012	HPLK2
47 56 10.70794	96 27 10.78504	478836.874	259580.056	.033	1	ADJUSTMENT	1999	17648
47 56 10.70886	96 27 10.78182	478837.094	259580.148	.033	1	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 10.70536	96 27 10.77730	478837.401	259579.794	.033	1	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 10.80955	96 27 09.57306			.100	1	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1803067.816	869786.856	794358.635	17437607.524	.131	3	GPS - OPUS	2020	GPSBM
1803067.824	869786.837	794358.643	17437607.505	.131	3	GPS - OPUS	2020	GPSBM
1803067.830	869786.911	794358.649	17437607.579	.131	3	GPS - RTRN	2020	RTRN2020
1803067.876	869786.899	794358.695	17437607.567	.023		ADJUSTMENT	2013	GPS2975
1803067.876	869786.899	794358.695	17437607.567	.023	C	GPS - STATIC	2013	HPLK2

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1803067.811	869786.856	794358.630	17437607.524	.033	C	GPS - STATIC	2012	HPLK2
1803067.826	869786.943	794358.645	17437607.612	.033	1	ADJUSTMENT	1999	17648
1803068.049	869787.027	794358.868	17437607.695	.033	1	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1803068.341	869786.659	794359.160	17437607.326	.033	1	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1178458.227	541708.946			.100	1	CLASSICAL SURVEY	1964	13522

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/IVES_2_RESET-SL1440-3E-16JUN2020.jpg	E	Jun 16, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/IVES_2_RESET-SL1440-2-16JUN2020.jpg		Jun 16, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/IVES_2_RESET-SL1440-1-16JUN2020.jpg		Jun 16, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: IVES 2 RM 1

NGS Name: IVES 2 RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4730](#)
NGS Quad / Sta Num : 47096144/
USGS Quad: DOROTHY

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	32	152 N	45 W	475609.97	962711.28		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1978	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1964)

Stamping: IVES 2 NO 1 1964

0.6 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ALONG COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13 NORTH OF DOROTHY, 31.0 FEET EAST OF COUNTY ROAD 3, 78.0 FEET SOUTH OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.848 03 = -88.871



Mn/DOT Name: IVES 2 RM 2

NGS Name: IVES 2 RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4731](#)
NGS Quad / Sta Num : 47096144/
USGS Quad: DOROTHY

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	32	152 N	45 W	475611.59	962711.32		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1978	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1964)

Stamping: IVES 2 NO 2 1964

0.6 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ALONG COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13 NORTH OF DOROTHY, 34.0 FEET EAST OF COUNTY ROAD 3, 86.5 FEET NORTH OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.848 03 = -88.871



Mn/DOT Name: IVES 2 RM 3

NGS Name: IVES 2 RM 3

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4823](#) [Get Map](#)
NGS Quad / Sta Num : 47096144/1002
USGS Quad: DOROTHY

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u> <u>Sec</u> <u>Twp</u> <u>Rng</u>				
SW 32 152 N 45 W	475610.00	962710.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1982	1982	GOOD	Horz=? Vert=YES	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1982)

Stamping: IVES 2 1964 NO 3 1982

0.5 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ON COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13, 119.8 FEET EAST OF COUNTY ROAD 3, 44.0 FEET NORTH OF THE NORTHERN EDGE OF AN OLD GRAVEL PIT, 58.4 FEET EAST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.852 03 = -88.871



Mn/DOT Name: IVES 2 RM 4

NGS Name: IVES 2 RM 4

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4824](#) [Get Map](#)
NGS Quad / Sta Num : 47096144/1002
USGS Quad: DOROTHY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	32	152 N	45 W	475609.00	962710.00			1982	2008	GOOD	Horz=YES Vert=YES	YES		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2008)

Stamping: IVES 2 1964 NO 4 1982

0.5 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ON COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13, 61.4 FEET EAST OF COUNTY ROAD 3, 21.0 FEET NORTHWEST FROM THE NORTHWESTERN CORNER OF AN OLD GRAVEL PIT, 58.1 FEET SOUTH OF A WITNESS POST, 1.0 FOOT SOUTH OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.957 12B = -88.871 09 = -88.848 03 = -88.871

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/IVES_2_RM_4-AI4824-3E-08MAY2008.jpg	E	May 8, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/IVES_2_RM_4-AI4824-2-08MAY2008.jpg		May 8, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/IVES_2_RM_4-AI4824-1-08MAY2008.jpg		May 8, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: IVES RM

NGS Name: IVES RM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AI4732](#) [Get Map](#)
NGS Quad / Sta Num : 47096144/
USGS Quad: DOROTHY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	32	152 N	45 W	475614.45	962711.92		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1906	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	CGS

Description: (1906)

Stamping:

0.7 MILE NORTHWEST OF DOROTHY, 0.3 MILE NORTH ALONG COUNTY ROAD 3 FROM THE JUNCTION OF COUNTY ROAD 3 AND COUNTY ROAD 13 NORTH OF DOROTHY, 10.0 FEET WEST OF COUNTY ROAD 3.

Station Notes

THE MARK IS A NAIL IN TERRA-COTA PIPE FILLED AND SET IN CONCRETE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.960 12B = -88.871 09 = -88.852 03 = -88.874



Mn/DOT Name: J 319

NGS Name: J 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0010](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	151 N	44 W	475234.00	961718.00	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2010	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1998)

Stamping: J 319

0.8 MILE SOUTHWEST OF RED LAKE FALLS, 0.4 MILE SOUTH ALONG TRUNK HIGHWAY 32 SOUTH (MAIN STREET) FROM THE JUNCTION OF TRUNK HIGHWAY 32 SOUTH (MAIN STREET) AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 98.0 FEET SOUTHWEST ALONG 7TH STREET SOUTHEAST, THEN 302.0 FEET SOUTH ALONG COUNTY ROAD 11 (MAIN AVENUE SOUTH), THEN 0.7 MILE WEST ALONG COUNTY ROAD 108 (8TH STREET SOUTHWEST), 1.4 MILES SOUTHWEST ON A RAILROAD FROM RED LAKE FALLS, 108.4 FEET SOUTHEAST OF RAILROAD MILEPOST 68, 42.0 FEET SOUTH OF A ROAD.

Station Notes

THE RAILROAD BED WAS REGRADED.
NOW IN CROPLAND.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1028.423	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1027.196	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1027.196	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1027.196	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -89.101 12B = -88.993 09 = -88.963 03 = -88.989

* No Horizontal Positions in the Database *



Mn/DOT Name: J=1035 USGS

NGS Name: 1035

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	151 N	44 W	475132.71	961717.42	3	

NGS ACRN: SL0011	Get Map
NGS Quad / Sta Num : 47096142/	
USGS Quad: MARCOUX CORNERS	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1906	2010	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	PIPE CAP	USGS

Description: (1906)

Stamping: 1035

1.7 MILES SOUTHWEST OF RED LAKE FALLS, 0.4 MILE SOUTH ALONG TRUNK HIGHWAY 32 SOUTH (MAIN STREET) FROM THE JUNCTION OF TRUNK HIGHWAY 32 SOUTH (MAIN STREET) AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 98.0 FEET SOUTHWEST ALONG 7TH STREET SOUTHEAST, THEN 1.3 MILES SOUTH AND SOUTHWEST ALONG COUNTY ROAD 11 (MAIN AVENUE SOUTH), THEN 0.2 MILE SOUTH ALONG COUNTY ROAD 112, 2.6 MILES SOUTHWEST ON A RAILROAD FROM RED LAKE FALLS, 50.5 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 69.6 FEET NORTHWEST OF THE NORTH RAILROAD SWITCH, 21.6 FEET EAST OF A ROAD ALONG A RAILROAD, AT A WITNESS POST.

Station Notes

THE AREA HAS BEEN DITCHED WHERE THE TIES FAIL. THE RAILROAD WAS REMOVED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1034.460	.033	3				VERTICAL CONTROL SURVEY	1991	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1033.643	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1033.246	.033	3				VERTICAL CONTROL SURVEY	1979	USGS-VERT
1033.246	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1033.246	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -89.035 12B = -88.940 09 = -88.901 03 = -88.911

* No Horizontal Positions in the Database *



Mn/DOT Name: JORDE

NGS Name: JORDE

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	17	150 N	42 W	474905.19	960406.90	2	C

NGS ACRN: [DO6440](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2011	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 24 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: JORDE 2011

3.2 MILES WEST OF BROOKS, 3.2 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 9.75, 63.6 FEET SOUTH OF TRUNK HIGHWAY 92, 21.0 FEET EAST OF A FIELD ENTRANCE, 23.4 FEET NORTH-NORTHWEST OF CABLE BOX NUMBER FW 6, 9.5 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1115.838	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1115.972	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1115.982	.262		1027.170	.197	2011	GPS - OPUS	2022	GPSBM
1115.916	.262		1027.101	.197	2011	GPS - RTRN	2021	RTRN2021
1115.995			1027.160	.009	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1115.995			1027.160	.009	2011	GPS - STATIC	2013	HTERR
1115.975	.131		1027.331	.066	1996	GPS - STATIC	2012	HTERR
1115.861	.262		1027.196	.197	2007	GPS - RTRN	2011	RTRN2011

Geoid Separations(ft): GEOID18 = -88.812 12B = -88.750 09 = -88.661 03 = -88.642

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.18848	96 04 06.90424	573239.339	216589.729	.131	3	GPS - OPUS	2022	GPSBM
47 49 05.18954	96 04 06.90432	573239.334	216589.837	.131	3	GPS - RTRN	2021	RTRN2021
47 49 05.18907	96 04 06.90347	573239.392	216589.789	.007		ADJUSTMENT	2013	GPS2946
47 49 05.18907	96 04 06.90347	573239.392	216589.789	.007	C	GPS - STATIC	2013	HTERR

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.19016	96 04 06.90485	573239.297	216589.899	.131	3	GPS - RTRN	2011	RTRN2011

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.18859	96 04 06.90439	573239.329	216589.740	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1895557.131	822853.143	886824.383	17390529.491	.131	3	GPS - OPUS	2022	GPSBM
1895557.130	822853.251	886824.382	17390529.598	.131	3	GPS - RTRN	2021	RTRN2021
1895557.186	822853.201	886824.438	17390529.548	.007		ADJUSTMENT	2013	GPS2946
1895557.186	822853.201	886824.438	17390529.548	.007	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1895557.096	822853.315	886824.348	17390529.662	.131	3	GPS - RTRN	2011	RTRN2011

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1895557.122	822853.155	886824.374	17390529.502	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/JORDE-DO6440-3S-20OCT2021.jpg	S	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/JORDE-DO6440-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/JORDE-DO6440-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K 319

NGS Name: K 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0009](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	22	151 N	44 W	475256.10	961633.35	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2019	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2008) Stamping: K 319 1940

AT RED LAKE FALLS, NEAR THE JUNCTION OF SECOND STREET SOUTHWEST AND CHAMPAGNE AVENUE SOUTHWEST, NEAR THE CITY WATER WELL BUILDING, AT THE SOUTHEAST CORNER OF A HOUSE, 0.9 FOOT SOUTH OF THE SOUTH FACE OF A BUILDING AT THE SOUTHEAST CORNER.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1037.954	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1038.075	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32
1038.049	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1036.812	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT
1036.812	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1036.812	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -89.121 12B = -89.002 09 = -88.979 03 = -89.012

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/K_319-SL0009-3W-08SEP2008.jpg	W	Sep 8, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/K_319-SL0009-2-08SEP2008.jpg		Sep 8, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/K_319-SL0009-1-08SEP2008.jpg		Sep 8, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K=984 USGS

NGS Name: K=984

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	14	151 N	44 W	475339.54	961550.16		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1906	2008	GOOD	Horz=YES Vert=YES	NO		PROJECTS 6 IN.	MARK IS STEEL PIPE

Monument Type

PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)

Disk Type

PIPE CAP

Mon. Agency

USGS

Description: (1906)

Stamping: 984

1.0 MILE NORTHEAST OF RED LAKE FALLS, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.3 MILE EAST-SOUTHEAST ALONG BRIDGE STREET NORTHWEST, THEN 0.3 MILE NORTH ALONG COUNTY ROAD 13 (BROADWAY AVENUE NORTHEAST), THEN 499.0 FEET EAST AND NORTH ALONG 9TH STREET NORTHEAST, THEN 190.0 FEET EAST ALONG 10TH STREET NORTHEAST, THEN 0.2 MILE EAST ALONG HAMILTON AVENUE NORTHWEST, THEN 430.0 EAST ALONG STEVENS AVENUE NORTHEAST, THEN 118.0 FEET NORTH ALONG STUDEBAKER LANE, 1.5 MILES NORTH ON A RAILROAD FROM RED LAKE FALLS, 90.8 FEET EAST OF RAILROAD MILEPOST 3, 516.7 FEET WEST OF A ROAD TO A POWERHOUSE, 22.0 FEET NORTH OF THE NORTH RAIL OF THE RAILROAD TRACKS, 1.3 FEET EAST OF A WITNESS POST.

Station Notes

THIS STATION IS ALSO NAMED 984. SEE 984 FOR PHOTOS.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
982.180	.033	3				VERTICAL CONTROL SURVEY	1979	USGS-VERT
982.180	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
982.180	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -89.157 12B = -89.025 09 = -89.009 03 = -89.048

* No Horizontal Positions in the Database *



Mn/DOT Name: KLOP

NGS Name: KLOP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8404](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	2	150 N	44 W	474956.97	961521.64	2	C	2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2013) Stamping: KLOP 2010

3.0 MILES SOUTH OF RED LAKE FALLS, 3.25 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, THEN 0.5 MILE EAST ON TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 92 MILEPOINT 0.50, 26.8 FEET NORTH OF TRUNK HIGHWAY 92, 15.9 FEET WEST OF A FIELD ENTRANCE, 7.7 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1056.740	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1056.740	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1056.848	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1056.970	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR
1056.970	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1057.052	.262		968.158	.197	2011	GPS - OPUS	2022 GPSBM
1056.861	.262		967.967	.197	2011	GPS - RTRN	2021 RTRN2021
1056.822	.262		967.928	.197	2011	GPS - RTRN	2019 RTRN2019
1056.970			968.062	.012	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1056.970			968.062	.012	2011	GPS - STATIC	2013 HTERR
1056.986	.131		968.210	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -88.894 12B = -88.815 09 = -88.760 03 = -88.760

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>			<u>Red Lake County</u>			<u>Project Info</u>	
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u> <u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>						
47 49 56.96623	96 15 21.63600		527181.095	221714.774	.131 3	GPS - OPUS	2022 GPSBM
47 49 56.96671	96 15 21.63542		527181.134	221714.823	.131 3	GPS - RTRN	2021 RTRN2021
47 49 56.96433	96 15 21.63414		527181.222	221714.582	.131 3	GPS - RTRN	2019 RTRN2019
47 49 56.96676	96 15 21.63504		527181.160	221714.828	.013	ADJUSTMENT	2013 GPS2946
47 49 56.96676	96 15 21.63504		527181.160	221714.828	.013 C	GPS - STATIC	2013 HTERR

<u>NAD83(1996)</u>			<u>Red Lake County</u>			<u>Project Info</u>	
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u> <u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>						
47 49 56.96631	96 15 21.63614		527181.085	221714.782	.033 C	GPS - STATIC	2012 HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1849762.793	829918.499	841021.649	17397657.401	.131	3	GPS - OPUS	2022	GPSBM
1849762.835	829918.546	841021.691	17397657.448	.131	3	GPS - RTRN	2021	RTRN2021
1849762.912	829918.301	841021.768	17397657.203	.131	3	GPS - RTRN	2019	RTRN2019
1849762.861	829918.550	841021.717	17397657.452	.013		ADJUSTMENT	2013	GPS2946
1849762.861	829918.550	841021.717	17397657.452	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1849762.784	829918.507	841021.640	17397657.409	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KLOP-DN8404-3N-20OCT2021.jpg	N	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KLOP-DN8404-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KLOP-DN8404-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KOLSTOE

NGS Name: KOLSTOE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8543](#)

[Get Map](#)

NGS Quad / Sta Num : 47095442/

USGS Quad: OKLEE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	15	151 N	41 W	475422.09	955406.47		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2008	POOR	Horz=NO Vert=NO	YES		RECESSED 6 IN.	MARKER W/BAR MAGNET

Monument Type

METAL ROD DRIVEN IN GROUND (<10 FT) (DEPTH 9 FT)

Disk Type

SURVEY DISK

Mon. Agency

MN-125

Description: (2008)

Stamping: KOLSTOE 2008

6.0 MILES EAST OF PLUMMER, 6.2 MILES EAST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND TRUNK HIGHWAY 59 IN PLUMMER, 58.5 FEET SOUTH OF COUNTY ROAD 1, 43.0 FEET EAST OF COUNTY ROAD 128 (270TH AVENUE SOUTHEAST), 31.0 FEET SOUTHEAST OF THE EAST END OF A CORRUGATED METAL PIPE, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

FOUND CAP LOOSE. USE WITH CAUTION.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1149.617			1060.047	.028	2011	HORIZONTAL ADJUSTMENT		2013	GPS2946
1149.617			1060.047	.028	2011	GPS - STATIC		2013	HTERR
1149.538	.131		1060.165	.066	1996	GPS - STATIC		2012	HTERR

Geoid Separations(ft): GEOID18 = -89.554 12B = -89.495 09 = -89.409 03 = -89.357

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 22.09070	95 54 06.47445	614025.435	248904.392	.013		ADJUSTMENT	2013	GPS2946
47 54 22.09070	95 54 06.47445	614025.435	248904.392	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 22.09030	95 54 06.47553	614025.362	248904.351	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1937666.282	853411.650	928987.063	17421041.598	.013		ADJUSTMENT	2013	GPS2946
1937666.282	853411.650	928987.063	17421041.598	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1937666.207	853411.613	928986.987	17421041.561	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KOLSTOE-DO8543-3S-21OCT2008.jpg	S	Oct 21, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KOLSTOE-DO8543-2-21OCT2008.jpg		Oct 21, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KOLSTOE-DO8543-1-21OCT2008.jpg		Oct 21, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KOOB

NGS Name: KOOB

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6420](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	11	150 N	42 W	474907.45	960011.06	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2012	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) **Stamping:** KOOB 2010

IN THE WEST EDGE OF BROOKS, 0.15 MILE WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 12.85, 58.5 FEET NORTH OF TRUNK HIGHWAY 92, 13.8 FEET EAST OF DRIVEWAY FIRE NUMBER 314, 21.4 FEET SOUTH-SOUTHWEST OF A POWER POLE, 2.8 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1126.668	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1126.796	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1126.796	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1126.805			1037.829	.008	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1126.805			1037.829	.008	2011	GPS - STATIC	2013	HTERR
1126.802	.131		1038.026	.066	1996	GPS - STATIC	2012	HTERR
1126.730	.262		1037.938	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -88.953 12B = -88.901 09 = -88.792 03 = -88.770

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Year	Reference	
47 49 07.45404	96 00 11.05536	589334.959	216888.204	2013	GPS2946	
47 49 07.45404	96 00 11.05536	589334.959	216888.204	2013	HTERR	

NAD83(2007)		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Year	Reference	
47 49 07.45372	96 00 11.05659	589334.875	216888.171	2012	RTRN2012	

NAD83(1996)		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Year	Reference	
47 49 07.45342	96 00 11.05625	589334.899	216888.141	2012	HTERR	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Year	Reference	
1911648.789	822471.399	902920.870	17390126.696	2013	GPS2946	
1911648.789	822471.399	902920.870	17390126.696	2013	HTERR	

NAD83(2007)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Year	Reference	
1911648.704	822471.370	902920.785	17390126.667	2012	RTRN2012	

NAD83(1996)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Year	Reference	
1911648.726	822471.339	902920.807	17390126.636	2012	HTERR	



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KOOB-DO6420-3N-21JUL2010.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KOOB-DO6420-2-21JUL2010.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/KOOB-DO6420-1-21JUL2010.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jul 21, 2010
	Jul 21, 2010
	Jul 21, 2010



Mn/DOT Name: L 319

NGS Name: L 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0007](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	12	151 N	44 W	475417.70	961416.55	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2008	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	BENCH MARK DISK	NGS

Description: (1940)

Stamping: L 319 1940

2.3 MILES NORTHEAST OF RED LAKE FALLS, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 2.8 MILES EAST-NORTHEAST ALONG BRIDGE STREET NORTHWEST, THEN 0.8 MILE WEST ALONG COUNTY HIGHWAY 19, 3.0 MILES NORTH ON A RAILROAD FROM RED LAKE FALLS, 132.0 FEET SOUTH OF RAILROAD MILEPOST 5, 55.5 FEET NORTH OF A ROAD, 42.8 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 13.8 FEET SOUTHWEST OF A POLE, 23.3 FEET NORTHEAST OF A POLE, 2.8 FEET WEST OF A WITNESS POST.

Station Notes

THE RAILROAD TRACKS HAVE BEEN REMOVED AND THE TIES FALL IN A DITCH BOTTOM.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1050.831	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1049.565	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1049.565	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1049.565	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Geoid Separations(ft): GEOID18 = -89.166 12B = -89.032 09 = -89.019 03 = -89.062

* No Horizontal Positions in the Database *



Mn/DOT Name: LAM MNDT

NGS Name: LAM

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DF7299](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	7	150 N	41 W	474934.02	955643.15	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2002	2012	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 13 FT)	SURVEY DISK	MNDT

Description: (2011)

Stamping: LAM 2002

2.5 MILES EAST OF BROOKS, 2.5 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 15.50, 0.45 MILE NORTH ON A ROAD, 35.8 FEET WEST OF A ROAD, 23.4 FEET SOUTH OF AN ENTRANCE, 1.3 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1139.676	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1139.788	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1139.837			1050.690	.008	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1139.837			1050.680	.008	2011	GPS - STATIC	2013 HTERR
1139.794	.131		1050.857	.066	1996	GPS - STATIC	2012 HTERR
			1050.690	.007	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
1139.729	.262		1050.798	.197	1996	GPS - RTRN	2008 RTRN2008
			1050.812	.008	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1139.729	.131		1050.815	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1894
1139.729	.131		1050.815	.066	1996	GPS - STATIC	2003 HBAGL

Geoid Separations(ft): GEOID18 = -89.127 12B = -89.091 09 = -88.976 03 = -88.927

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method
47 49 34.01510	95 56 43.15385	603509.352	219651.735	.010		ADJUSTMENT
47 49 34.01513	95 56 43.15396	603509.345	219651.738	.010	C	GPS - STATIC
47 49 34.01510	95 56 43.15385	603509.352	219651.735	.010		ADJUSTMENT

NAD83(2007)

Geodetic Position		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method
47 49 34.01504	95 56 43.15482	603509.286	219651.728	.010		ADJUSTMENT

NAD83(1996)

Geodetic Position		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method
47 49 34.01482	95 56 43.15496	603509.277	219651.706	.033	C	GPS - STATIC
47 49 34.01546	95 56 43.15395	603509.345	219651.771	.131	3	GPS - RTRN
47 49 34.01482	95 56 43.15496	603509.277	219651.706	.033	C	ADJUSTMENT
47 49 34.01482	95 56 43.15496	603509.277	219651.706	.033	C	GPS - STATIC



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1925925.328	824633.329	917204.583	17392270.699	.010		ADJUSTMENT	2013	GPS2946
1925925.320	824633.332	917204.575	17392270.703	.010	C	GPS - STATIC	2013	HTERR
1925925.328	824633.329	917204.583	17392270.699	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1925925.261	824633.325	917204.517	17392270.696	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1925925.251	824633.303	917204.506	17392270.674	.033	C	GPS - STATIC	2012	HTERR
1925925.322	824633.365	917204.577	17392270.736	.131	3	GPS - RTRN	2008	RTRN2008
1925925.251	824633.303	917204.506	17392270.674	.033	C	ADJUSTMENT	2003	GPS1894
1925925.251	824633.303	917204.506	17392270.674	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAM-DF7299-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAM-DF7299-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAM-DF7299-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LAMB MNDT

NGS Name: LAMB

County: RED LAKE, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	25	150 N	41 W	474723.16	955129.81	2	C

NGS ACRN: [DF7300](#)

[Get Map](#)

NGS Quad / Sta Num : 47095442/

USGS Quad: OKLEE

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2011)

Stamping: LAMB 2002

3.0 MILES SOUTH OF OKLEE, 2.0 MILES SOUTH ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222 (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), AT TRUNK HIGHWAY 92 MILEPOINT 21.55, 101.3 FEET EAST OF TRUNK HIGHWAY 92, 45.1 FEET SOUTH OF A TOWNSHIP ROAD, 34.2 FEET WEST OF AN ENTRANCE, 27.6 FEET EAST OF A POWER POLE, 1.1 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1172.911	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1172.993	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1173.128	.262		1083.961	.197	2011	GPS - OPUS	2022 GPSBM
1173.265	.262		1084.099	.197	2011	GPS - RTRN	2021 RTRN2021
1173.101			1083.879	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1173.101			1083.879	.009	2011	GPS - STATIC	2013 HTERR
1172.996	.131		1084.027	.066	1996	GPS - STATIC	2012 HTERR
			1083.879	.009	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
1172.934	.262		1083.964	.197	1996	GPS - RTRN	2008 RTRN2008
			1084.004	.010	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1172.964	.131		1084.014	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1894
1172.964	.131		1084.014	.066	1996	GPS - STATIC	2003 HBAGL

Geoid Separations(ft): GEOID18 = -89.163 12B = -89.153 09 = -89.032 03 = -88.966

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 23.16271	95 51 29.80516	624979.153	206520.950	.131	3	GPS - OPUS	2022	GPSBM
47 47 23.16339	95 51 29.80584	624979.106	206521.019	.131	3	GPS - RTRN	2021	RTRN2021
47 47 23.16319	95 51 29.80506	624979.160	206520.999	.010		ADJUSTMENT	2013	GPS2946
47 47 23.16314	95 51 29.80505	624979.160	206520.994	.010	C	GPS - STATIC	2013	HTERR
47 47 23.16319	95 51 29.80506	624979.160	206520.999	.013		ADJUSTMENT	2012	GPS2800

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 23.16311	95 51 29.80600	624979.096	206520.990	.013		ADJUSTMENT	2007	GPS2300

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 23.16280	95 51 29.80609	624979.090	206520.959	.033	C	GPS - STATIC	2012	HTERR
47 47 23.16344	95 51 29.80506	624979.159	206521.024	.131	3	GPS - RTRN	2008	RTRN2008
47 47 23.16280	95 51 29.80609	624979.090	206520.959	.033	C	ADJUSTMENT	2003	GPS1894
47 47 23.16280	95 51 29.80609	624979.090	206520.959	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1946818.352	810609.130	938085.255	17378215.624	.131	3	GPS - OPUS	2022	GPSBM
1946818.308	810609.201	938085.211	17378215.694	.131	3	GPS - RTRN	2021	RTRN2021
1946818.361	810609.178	938085.264	17378215.672	.010		ADJUSTMENT	2013	GPS2946
1946818.361	810609.173	938085.264	17378215.667	.010	C	GPS - STATIC	2013	HTERR
1946818.361	810609.178	938085.264	17378215.672	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1946818.296	810609.172	938085.199	17378215.666	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1946818.289	810609.141	938085.192	17378215.635	.033	C	GPS - STATIC	2012	HTERR
1946818.361	810609.204	938085.265	17378215.698	.131	3	GPS - RTRN	2008	RTRN2008
1946818.289	810609.141	938085.192	17378215.635	.033	C	ADJUSTMENT	2003	GPS1894
1946818.289	810609.141	938085.192	17378215.635	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAMB-DF7300-3S-20OCT2021.jpg	S	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAMB-DF7300-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAMB-DF7300-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LAMBERT MNDT

NGS Name: LAMBERT

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AB9938](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	32	150 N	41 W	474630.76	955536.84	2	B

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1994	2016	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
STEEL ROD (NO SLEEVE) (DEPTH 16 FT)	METAL ROD	MNDT

Description: (2008)

Stamping: LAMBERT 1994

4.0 MILES SOUTHEAST OF BROOKS, 3.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 331.65, THEN 3.4 MILES EAST ON COUNTY ROAD 7, 46.5 FEET SOUTH OF COUNTY ROAD 7, 16.0 FEET EAST OF A FIELD ENTRANCE, 46.8 FEET EAST-NORTHEAST OF A POWER POLE, 8.2 FEET SOUTHWEST OF THE EAST END OF AN 18.0 INCH DIAMETER METAL CULVERT, 3.0 FEET WEST OF A WITNESS POST.

Station Notes

THE ACCESS COVER IS RECESSED 1.0 INCH.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1171.871	.016	2/1				VERTICAL ADJUSTMENT	2006	00000425-9
1171.851	.016	2/1				VERTICAL CONTROL SURVEY	2005	VLAMB

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1171.871			1082.770	.009	2011	HORIZONTAL ADJUSTMENT	2018	GPS3119
1171.871	.131		1082.941	.066	1996	GPS - STATIC	2017	HMNCORS07
1171.871			1082.770	.009	2011	GPS - STATIC	2017	HMNPH
1171.740	.262		1082.754	.197	2011	GPS - RTRN	2015	RTRN2015
1171.871			1082.770	.007	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1171.871	.131		1082.908	.066	1996	GPS - STATIC	2013	HPLK1
1171.871			1082.770	.007	2011	GPS - STATIC	2013	HPLK1
1171.871			1082.770	.009	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1171.871			1082.767	.009	2011	GPS - STATIC	2013	HTERR
1171.848	.131		1082.960	.066	1996	GPS - STATIC	2012	HTERR
			1082.770	.007	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1082.895	.007	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1171.881	.098		1082.908	.049	1996	GPS - STATIC	2004	GPS1954
1171.750	.098		1082.908	.049	1996	GPS - STATIC	2004	GPS1994
1171.782	.131		1082.908	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1894
1171.782	.131		1082.908	.066	1996	GPS - STATIC	2003	HBAGL
1171.835	.098		1082.908	.049	1996	GPS - STATIC	1997	GPS805-B

Geoid Separations(ft): GEOID18 = -89.068 12B = -88.986 09 = -88.858 03 = -88.891

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 46 30.76376	95 55 36.83703	608140.409	201107.841	.007		ADJUSTMENT	2018	GPS3119
47 46 30.76376	95 55 36.83703	608140.409	201107.841	.007	C	GPS - STATIC	2017	HMNPH
47 46 30.76396	95 55 36.83637	608140.454	201107.861	.131	3	GPS - RTRN	2015	RTRN2015
47 46 30.76376	95 55 36.83703	608140.409	201107.841	.007		ADJUSTMENT	2013	GPS2970
47 46 30.76378	95 55 36.83697	608140.413	201107.843	.007	C	GPS - STATIC	2013	HPLK1
47 46 30.76376	95 55 36.83703	608140.409	201107.841	.007		ADJUSTMENT	2013	GPS2946
47 46 30.76387	95 55 36.83707	608140.406	201107.852	.007	C	GPS - STATIC	2013	HTERR
47 46 30.76376	95 55 36.83703	608140.409	201107.841	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 46 30.76370	95 55 36.83797	608140.344	201107.834	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 46 30.76409	95 55 36.83740	608140.383	201107.874	.033	C	GPS - STATIC	2017	HMNCORS07
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.033	C	GPS - STATIC	2013	HPLK1
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.033	C	GPS - STATIC	2012	HTERR
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.016	B	GPS - STATIC	2004	GPS1954
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.016	B	GPS - STATIC	2004	GPS1994
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.033	C	ADJUSTMENT	2003	GPS1894
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.033	C	GPS - STATIC	2003	HBAGL
47 46 30.76329	95 55 36.83816	608140.332	201107.793	.016	B	GPS - STATIC	1997	GPS805-B

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1929768.282	805912.900	921024.534	17373539.888	.007		ADJUSTMENT	2018	GPS3119
1929768.282	805912.900	921024.534	17373539.888	.007	C	GPS - STATIC	2017	HMNPH
1929768.328	805912.918	921024.580	17373539.906	.131	3	GPS - RTRN	2015	RTRN2015
1929768.282	805912.900	921024.534	17373539.888	.007		ADJUSTMENT	2013	GPS2970
1929768.286	805912.902	921024.538	17373539.889	.007	C	GPS - STATIC	2013	HPLK1
1929768.282	805912.900	921024.534	17373539.888	.007		ADJUSTMENT	2013	GPS2946
1929768.280	805912.911	921024.532	17373539.899	.007	C	GPS - STATIC	2013	HTERR
1929768.282	805912.900	921024.534	17373539.888	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1929768.218	805912.896	921024.470	17373539.884	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1929768.258	805912.934	921024.510	17373539.922	.033	C	GPS - STATIC	2017	HMNCORS07
1929768.203	805912.855	921024.455	17373539.843	.033	C	GPS - STATIC	2013	HPLK1
1929768.203	805912.855	921024.455	17373539.843	.033	C	GPS - STATIC	2012	HTERR
1929768.203	805912.855	921024.455	17373539.843	.016	B	GPS - STATIC	2004	GPS1954
1929768.203	805912.855	921024.455	17373539.843	.016	B	GPS - STATIC	2004	GPS1994
1929768.203	805912.855	921024.455	17373539.843	.033	C	ADJUSTMENT	2003	GPS1894
1929768.203	805912.855	921024.455	17373539.843	.033	C	GPS - STATIC	2003	HBAGL
1929768.203	805912.855	921024.455	17373539.843	.016	B	GPS - STATIC	1997	GPS805-B

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAMBERT-AB9938-3S-01SEP2015.jpg	S	Sep 1, 2015
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAMBERT-AB9938-2-01SEP2015.jpg		Sep 1, 2015
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LAMBERT-AB9938-1-15APR2009.jpg		Apr 15, 2009

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LED MNDT

NGS Name: LED

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1389](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	7	151 N	43 W	475443.32	961325.04		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2019	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
IRON ROD	METAL ROD	MNDT

Description: (1977)

Stamping: LED 1977

3.5 MILES NORTHEAST OF RED LAKE FALLS, 0.4 MILE NORTH-NORTHEAST ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 3.3 MILES EAST-SOUTHEAST ALONG TRUNK HIGHWAY 32 NORTH (BRIDGE STREET NORTHWEST), THEN 39.0 FEET EAST ALONG COUNTY ROAD 107, 3.15 MILES NORTHEAST ON TRUNK HIGHWAY 32 FROM A TRUNK HIGHWAY 32 BRIDGE OVER THE CLEARWATER RIVER AT RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 89.5, AT THE AIRPORT ENTRANCE, 29.6 FEET EAST OF TRUNK HIGHWAY 32, 19.0 FEET NORTH OF A GRAVEL ROAD, 7.1 FEET SOUTHWEST OF A STOP SIGN, 48.3 FEET SOUTHEAST OF A SECTION CORNER WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1062.662	.197		973.925	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1061.186						RECIPROCAL VERTICAL ANGLE	1977	HORZ

Geoid Separations(ft): GEOID18 = -89.173 12B = -89.035 09 = -89.025 03 = -89.068

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 43.31877	96 13 25.03792	535083.081	250745.098	.066	2	ADJUSTMENT	1999	17648
47 54 43.31580	96 13 25.03259	535083.445	250744.798	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 43.31581	96 13 25.03117	535083.542	250744.799	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 54 43.43386	96 13 23.86873			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1858882.938	858585.147	850183.982	17426323.800	.066	2	ADJUSTMENT	1999	17648
1858883.289	858584.831	850184.332	17426323.484	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1858883.386	858584.828	850184.429	17426323.481	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1234272.267	530508.822			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: LEE MNDT

NGS Name: LEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DF7302](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	10	150 N	41 W	474921.22	955248.54	2	C	2002	2012	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2011)

Stamping: LEE 2002

1.5 MILES SOUTHWEST OF OKLEE, 1.0 MILE WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222 IN OKLEE, AT TRUNK HIGHWAY 92 MILEPOINT 18.55, THEN 0.25 MILE NORTH ON 280TH AVENUE SOUTHEAST, 28.0 FEET WEST OF 280TH AVENUE SOUTHEAST, 16.1 FEET NORTH OF AN ENTRANCE, 1.1 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1153.731	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1153.840	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1153.948			1064.660	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1153.948			1064.657	.009	2011	GPS - STATIC	2013 HTERR
1153.836	.131		1064.814	.066	1996	GPS - STATIC	2012 HTERR
			1064.660	.009	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
1153.846	.262		1064.817	.197	1996	GPS - RTRN	2008 RTRN2008
			1064.788	.009	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1153.803	.131		1064.794	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1894
1153.803	.131		1064.794	.066	1996	GPS - STATIC	2003 HBAGL

Geoid Separations(ft): GEOID18 = -89.239 12B = -89.222 09 = -89.114 03 = -89.025

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 21.22125	95 52 48.54046	619527.298	218449.343	.010		ADJUSTMENT
47 49 21.22134	95 52 48.54018	619527.317	218449.352	.010	C	GPS - STATIC
47 49 21.22125	95 52 48.54046	619527.298	218449.343	.010		ADJUSTMENT
<u>NAD83(2007)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 21.22119	95 52 48.54138	619527.235	218449.336	.013		ADJUSTMENT
<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 49 21.22085	95 52 48.54153	619527.225	218449.302	.033	C	GPS - STATIC
47 49 21.22114	95 52 48.54129	619527.241	218449.331	.131	3	GPS - RTRN
47 49 21.22085	95 52 48.54153	619527.225	218449.302	.033	C	ADJUSTMENT
47 49 21.22085	95 52 48.54153	619527.225	218449.302	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1941875.992	822755.541	933157.274	17390371.614	.010		ADJUSTMENT	2013	GPS2946
1941876.011	822755.549	933157.294	17390371.622	.010	C	GPS - STATIC	2013	HTERR
1941875.992	822755.541	933157.274	17390371.614	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1941875.929	822755.537	933157.211	17390371.610	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1941875.917	822755.503	933157.200	17390371.576	.033	C	GPS - STATIC	2012	HTERR
1941875.935	822755.532	933157.217	17390371.605	.131	3	GPS - RTRN	2008	RTRN2008
1941875.917	822755.503	933157.200	17390371.576	.033	C	ADJUSTMENT	2003	GPS1894
1941875.917	822755.503	933157.200	17390371.576	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LEE-DF7302-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LEE-DF7302-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LEE-DF7302-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LES MNDT RM 1

NGS Name: LES RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4189](#)

[Get Map](#)

NGS Quad / Sta Num : 47096114/

USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	25	152 N	44 W	475745.66	961326.08	2	3	1977	2023	GOOD	Horz=YES Vert=YES	YES		PROJECTS 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2008)

Stamping: LES NO 1 1977

3.5 MILES SOUTH OF ST. HILAIRE, 3.9 MILES SOUTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 3, TO TRUNK HIGHWAY 32 MILEPOINT 93.05, THEN 0.4 MILE WEST ON COUNTY ROAD 31, 51.24 FEET SOUTHWEST OF LES MAIN STATION, 23.0 FEET SOUTH OF COUNTY ROAD 31, 16.0 FEET WEST OF THE OLD RAILROAD GRADE, 54.7 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1085.237	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1085.237	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1085.237	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1085.375	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1085.218	.262		996.035	.197	2011	GPS - RTRN	2019 RTRN2019
1085.277	.262		996.182	.197	1996	GPS - RTRN	2008 RTRN2008

Geoid Separations(ft): GEOID18 = -89.186 12B = -89.071 09 = -89.045 03 = -89.091

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
47 57 45.65863	96 13 26.08144	534977.862	269222.439	.131	3	GPS - RTRN 2019 RTRN2019
<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
47 57 45.66129	96 13 26.08087	534977.900	269222.709	.131	3	GPS - RTRN 2008 RTRN2008

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
1859558.343	877047.915	850885.164	17444793.149	.131	3	GPS - RTRN 2019 RTRN2019
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
1859558.393	877048.183	850885.215	17444793.417	.131	3	GPS - RTRN 2008 RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LES_RM_1-CP4189-3S-09OCT2019.jpg	S	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LES_RM_1-CP4189-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LES_RM_1-CP4189-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LILAC

NGS Name: LILAC

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6407](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	3	150 N	43 W	474956.62	960921.74	2	C	2010	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) **Stamping:** LILAC 2010

1.0 MILE WEST OF TERREBONNE, 0.8 MILE WEST ALONG TRUNK HIGHWAY 92 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 92 AND COUNTY ROAD 12 IN TERREBONNE, AT TRUNK HIGHWAY 92 MILEPOINT 5.15, 42.2 FEET NORTH OF TRUNK HIGHWAY 92, 11.2 FEET EAST OF ENTRANCE FIRE NUMBER 15160, 56.8 FEET EAST-SOUTHEAST OF A POWER POLE NUMBER 602, 2.3 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1090.497	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1090.621	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1090.519	.262		1001.652	.197	2011	GPS - RTRN	2021 RTRN2021
1090.582			1001.720	.013	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1090.582			1001.720	.013	2011	GPS - STATIC	2013 HTERR
1090.615	.131		1001.898	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -88.868 12B = -88.773 09 = -88.717 03 = -88.724

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
47 49 56.62024	96 09 21.73666	551737.726	221730.752	.131	3	GPS - RTRN 2021 RTRN2021
47 49 56.62055	96 09 21.73697	551737.705	221730.783	.016		ADJUSTMENT 2013 GPS2946
47 49 56.62055	96 09 21.73697	551737.705	221730.783	.016	C	GPS - STATIC 2013 HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
47 49 56.62015	96 09 21.73798	551737.636	221730.743	.033	C	GPS - STATIC 2012 HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
1874294.820	828897.144	865562.241	17396603.449	.131	3	GPS - RTRN 2021 RTRN2021
1874294.800	828897.176	865562.221	17396603.481	.016		ADJUSTMENT 2013 GPS2946
1874294.800	828897.176	865562.221	17396603.481	.016	C	GPS - STATIC 2013 HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
1874294.729	828897.138	865562.151	17396603.443	.033	C	GPS - STATIC 2012 HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LILAC-DO6407-3N-20OCT2021.jpg	N	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LILAC-DO6407-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LILAC-DO6407-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LORREN MNDT

NGS Name: LORREN

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DH7977](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	29	150 N	41 W	474631.61	955607.25	2	C	2003	2012	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2003)

Stamping: LORREN 2003

4.0 MILES SOUTHEAST OF BROOKS, 3.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, TO TRUNK HIGHWAY 59 MILEPOINT 331.65, THEN 3.1 MILES EAST ON COUNTY ROAD 7, 57.2 FEET NORTH OF COUNTY ROAD 7, 12.2 FEET EAST OF A FIELD ENTRANCE, 9.7 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1169.092	.016	2/1				VERTICAL ADJUSTMENT	2006 00000425-9
1169.069	.016	2/1				VERTICAL CONTROL SURVEY	2005 VLAMB

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1169.092			1079.978	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1169.092			1079.978	.009	2011	GPS - STATIC	2013 HTERR
1169.059	.131		1080.198	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -89.042 12B = -88.960 09 = -88.825 03 = -88.871

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 46 31.60756	95 56 07.24973	606062.567	201181.638	.010		ADJUSTMENT
47 46 31.60756	95 56 07.24973	606062.567	201181.638	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 46 31.60711	95 56 07.25073	606062.499	201181.592	.033	C	GPS - STATIC

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1927695.696	806074.393	918951.556	17373704.066	.010		ADJUSTMENT
1927695.696	806074.393	918951.556	17373704.066	.010	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
1927695.627	806074.350	918951.487	17373704.023	.033	C	GPS - STATIC

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LORREN-DH7977-3N-06MAY2008.jpg	N	May 6, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LORREN-DH7977-2-06MAY2008.jpg		May 6, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/LORREN-DH7977-1-06MAY2008.jpg		May 6, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LOST 97

NGS Name: LOST 97

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	150 N	42 W	475036.00	960019.00	2	

NGS ACRN: [SL0071](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2008	DESTROYED	Horz=NO Vert=NO	NO	RR		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STRUCTURE (MASSIVE)	SURVEY DISK	USACE

Description: (1977)

Stamping: LOST 97 ST. PAUL

2.0 MILES NORTH-NORTHWEST OF BROOKS, IN THE NORTHEAST CORNER OF A RAILROAD BRIDGE OVER THE LOST RIVER, 6.5 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 1.7 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 NORTH, 1.35 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 NORTH OF BROOKS, AT TRUNK HIGHWAY 59 MILEPOST 336.40.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1130.720	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1129.512	.016	2				VERTICAL CONTROL SURVEY	1978	L24405
1129.506	.033	3				VERTICAL CONTROL SURVEY	1963	USGS-VERT

Geoid Separations(ft): GEOID18 = -89.091 12B = -89.022 09 = -88.937 03 = -88.907

* No Horizontal Positions in the Database *



Mn/DOT Name: M 319

NGS Name: M 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0006](#)

[Get Map](#)

NGS Quad / Sta Num : 47096114/

USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	1	151 N	44 W	475509.74	961328.48	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2023	GOOD	Horz=YES Vert=YES	YES		PROJECTS 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1998)

Stamping: M 319 1940

3.4 MILES NORTHEAST OF RED LAKE FALLS, 4.6 MILES NORTHEAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 13, AT TRUNK HIGHWAY 32 MILEPOINT 89.95, 228.0 FEET WEST OF TRUNK HIGHWAY 32, 48.0 FEET WEST OF AN OLD RAILROAD GRADE, 42.0 FEET NORTH OF A ROAD, 2.1 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1065.792	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1065.792	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1065.821	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1065.949	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1064.676	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1064.676	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1065.746	.262		976.563	.197	2011	GPS - RTRN	2019	RTRN2019
1065.949			976.789	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1065.949			976.776	.014	2011	GPS - STATIC	2013	HTERR
1065.943	.131		976.868	.066	1996	GPS - STATIC	2012	HTERR
			976.789	.011	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			976.904	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1065.943	.131		976.865	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1663
1065.943	.131		976.865	.066	1996	GPS - STATIC	2001	H3986

Geoid Separations(ft): GEOID18 = -89.180 12B = -89.042 09 = -89.032 03 = -89.081

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 55 09.74426	96 13 28.48233	534843.500	253422.490	.131	3	GPS - RTRN	2019	RTRN2019
47 55 09.74207	96 13 28.48167	534843.545	253422.268	.013		ADJUSTMENT	2013	GPS2946
47 55 09.74200	96 13 28.48182	534843.535	253422.261	.013	C	GPS - STATIC	2013	HTERR
47 55 09.74207	96 13 28.48167	534843.545	253422.268	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 55 09.74200	96 13 28.48269	534843.476	253422.261	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 55 09.74195	96 13 28.48258	534843.483	253422.256	.033	C	GPS - STATIC	2012	HTERR
47 55 09.74195	96 13 28.48258	534843.483	253422.256	.033	C	ADJUSTMENT	2002	GPS1663
47 55 09.74195	96 13 28.48258	534843.484	253422.256	.033	C	GPS - STATIC	2001	H3986

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1858756.701	861269.903	850061.363	17429009.825	.131	3	GPS - RTRN	2019	RTRN2019
1858756.737	861269.679	850061.399	17429009.602	.013		ADJUSTMENT	2013	GPS2946
1858756.727	861269.673	850061.388	17429009.595	.013	C	GPS - STATIC	2013	HTERR
1858756.737	861269.679	850061.399	17429009.602	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1858756.667	861269.675	850061.329	17429009.597	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1858756.675	861269.670	850061.336	17429009.592	.033	C	GPS - STATIC	2012	HTERR
1858756.675	861269.670	850061.336	17429009.592	.033	C	ADJUSTMENT	2002	GPS1663
1858756.675	861269.670	850061.337	17429009.592	.033	C	GPS - STATIC	2001	H3986

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/M_319-SL0006-3N-09OCT2019.jpg	N	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/M_319-SL0006-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/M_319-SL0006-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: M CAS 9

NGS Name: M CAS 9

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8559](#)

[Get Map](#)

NGS Quad / Sta Num : 47096141/

USGS Quad: RED LAKE FALLS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	31	152 N	44 W	475604.26	962108.83		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: M CAS 9 2008

4.7 MILES NORTHWEST OF RED LAKE FALLS, 6.8 MILES NORTHWEST ALONG COUNTY ROAD 13 FROM THE JUNCTION OF COUNTY ROAD 13 AND TRUNK HIGHWAY 32 IN RED LAKE FALLS, THEN 0.1 MILE NORTH ON COUNTY ROAD 9, 90.7 FEET EAST OF COUNTY ROAD 9, 50.5 FEET NORTH OF 160TH STREET SOUTHWEST, 387.3 FEET EAST OF THE NORTH END OF A CORRUGATED METAL PIPE, 14.2 FEET NORTHWEST OF A TELEPHONE PEDESTAL, 2.6 FEET WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1024.565	.262		935.448	.197	2011	GPS - OPUS	2020	GPSBM
1024.496	.262		935.379	.197	2011	GPS - OPUS	2020	GPSBM
1024.253	.262		935.234	.197	2011	GPS - RTRN	2020	RTRN2020
1024.532			935.395	.028	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1024.532			935.395	.028	2011	GPS - STATIC	2013	HTERR
1024.539	.131		935.520	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.117 12B = -89.019 09 = -88.996 03 = -89.022

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 04.25825	96 21 08.82580	503484.864	258914.975	.131	3	GPS - OPUS	2020	GPSBM
47 56 04.25846	96 21 08.82540	503484.891	258914.996	.131	3	GPS - OPUS	2020	GPSBM
47 56 04.25852	96 21 08.82507	503484.914	258915.002	.131	3	GPS - RTRN	2020	RTRN2020
47 56 04.25880	96 21 08.82409	503484.981	258915.030	.016		ADJUSTMENT	2013	GPS2946
47 56 04.25880	96 21 08.82409	503484.981	258915.030	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 04.25862	96 21 08.82501	503484.918	258915.012	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1827662.353	868081.377	818962.819	17435867.091	.131	3	GPS - OPUS	2020	GPSBM
1827662.381	868081.397	818962.847	17435867.111	.131	3	GPS - OPUS	2020	GPSBM
1827662.404	868081.403	818962.870	17435867.116	.131	3	GPS - RTRN	2020	RTRN2020
1827662.472	868081.428	818962.938	17435867.142	.016		ADJUSTMENT	2013	GPS2946
1827662.472	868081.428	818962.938	17435867.142	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1827662.408	868081.412	818962.875	17435867.126	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/M_CAS_9-DO8559-3E-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/M_CAS_9-DO8559-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/M_CAS_9-DO8559-1-16JUN2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
E	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020



Mn/DOT Name: MARCOUX

NGS Name: MARCOUX

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1431](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/1024
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	34	150 N	44 W	474537.76	961605.55	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2008)

Stamping: MARCOUX 1964

7.3 MILES NORTHWEST OF MENTOR, 7.14 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 45 (THE JUNCTION IS 0.2 MILE NORTH OF MENTOR), THEN 0.17 MILE NORTH ALONG TRUNK HIGHWAY 32, THEN 0.05 MILE WEST ALONG 280TH STREET SOUTHEAST, IN THE NORTHWEST QUADRANT OF THE JUNCTION OF 280TH STREET AND TRUNK HIGHWAY 32, 327.5 FEET WEST OF TRUNK HIGHWAY 32 NORTH, 220.0 FEET NORTH OF 280TH STREET SOUTHEAST, 167.0 FEET NORTH OF STATION 6301 M, 114.68 FEET NORTHWEST OF STATION MARCOUX RM 1, 167.15 FEET NORTHEAST OF STATION MARCOUX RM 2, 21.0 FEET NORTH OF THE NORTHWEST CORNER OF A FENCE, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1092.754	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1092.754	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1092.754	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1092.875	.016	2/1				VERTICAL CONTROL SURVEY	2012	VCROO
1092.875	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1092.875			1004.499	.010	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1092.875	.131		1004.611	.066	1996	GPS - STATIC	2013	HPLK1
1092.875			1004.499	.010	2011	GPS - STATIC	2013	HPLK1
1092.947	.262		1004.716	.197	1996	GPS - RTRN	2008	RTRN2008
1095.798	.197		1007.856	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1095.798						RECIPROCAL VERTICAL ANGLE	1964	HORZ

Geoid Separations(ft): GEOID18 = -88.366 12B = -88.330 09 = -88.231 03 = -88.228

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 37.75885	96 16 05.54531	524218.545	195444.503	.016		ADJUSTMENT	2013	GPS2970
47 45 37.75885	96 16 05.54531	524218.545	195444.503	.016	C	GPS - STATIC	2013	HPLK1

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 37.75844	96 16 05.54625	524218.481	195444.462	.033	C	GPS - STATIC	2013	HPLK1
47 45 37.75841	96 16 05.54605	524218.495	195444.459	.131	3	GPS - RTRN	2008	RTRN2008
47 45 37.75769	96 16 05.54661	524218.456	195444.386	.066	2	ADJUSTMENT	1999	17648
47 45 37.75603	96 16 05.54301	524218.703	195444.218	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 37.75565	96 16 05.54007	524218.903	195444.180	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 45 37.87318	96 16 04.35857			.100	2	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1845693.591	803800.417	836917.034	17371533.348	.016		ADJUSTMENT	2013	GPS2970
1845693.591	803800.417	836917.034	17371533.348	.016	C	GPS - STATIC	2013	HPLK1

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1845693.525	803800.378	836916.968	17371533.309	.033	C	GPS - STATIC	2013	HPLK1
1845693.539	803800.374	836916.982	17371533.305	.131	3	GPS - RTRN	2008	RTRN2008
1845693.498	803800.303	836916.940	17371533.234	.066	2	ADJUSTMENT	1999	17648
1845693.736	803800.125	836917.179	17371533.056	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1845693.936	803800.078	836917.378	17371533.009	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1221084.014	475724.060			.100	2	CLASSICAL SURVEY	1964	13522

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX-SL1431-3N-08SEP2008.jpg	N	Sep 8, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX-SL1431-2-08SEP2008.jpg		Sep 8, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX-SL1431-1-08SEP2008.jpg		Sep 8, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MARCOUX AZ MK

NGS Name: MARCOUX AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4252](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	150 N	44 W	474552.00	961600.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2019	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	CGS

Description: (1964) Stamping: MARCOUX 1964

7.8 MILES NORTHWEST OF MENTOR, 7.3 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 12 IN MENTOR, THEN 0.4 MILE NORTH ON TRUNK HIGHWAY 32, 75.0 FEET NORTH OF A POWER POLE, 50.6 FEET WEST OF TRUNK HIGHWAY 32, 20.0 FEET NORTH OF A FIELD ENTRANCE, 1.5 FEET EAST OF A FENCE CORNER, 2.4 FEET SOUTHEAST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.395 12B = -88.359 09 = -88.264 03 = -88.258



Mn/DOT Name: MARCOUX RM 1

NGS Name: MARCOUX RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4253](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/1024
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	34	150 N	44 W	474536.87	961604.50	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2019	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2008)

Stamping: MARCOUX NO 1 1964

7.0 MILES NORTHWEST OF MENTOR, 0.1 MILE NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2 IN MARCOUX, THEN 0.05 MILE WEST ON 280TH STREET SOUTHEAST, IN THE NORTHWEST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 32, 114.68 FEET SOUTHEAST OF MARCOUX.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1093.584	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941	
1093.702	.016	2/1				VERTICAL CONTROL SURVEY	2012	VCROO	
1093.610	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1093.646	.262		1005.421	.197	1996	GPS - RTRN	2008	RTRN2008	

Geoid Separations(ft): GEOID18 = -88.363 12B = -88.327 09 = -88.228 03 = -88.225

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 45 36.87467	96 16 04.49749	524290.253	195354.999	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
1845761.445	803707.975	836984.800	17371440.780	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX_RM_1-CP4253-3N-07APR2010.jpg	N	Apr 7, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX_RM_1-CP4253-2-07APR2010.jpg		Apr 7, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX_RM_1-CP4253-1-07APR2010.jpg		Apr 7, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MARCOUX RM 2

NGS Name: MARCOUX RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4254](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/1024
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	34	150 N	44 W	474536.32	961606.75	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2023	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2008)

Stamping: MARCOUX NO 2 1964

7.0 MILES NORTHWEST OF MENTOR, 0.1 MILE NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2 IN MARCOUX, THEN 0.1 MILE WEST ON 280TH SOUTHEAST, IN THE NORTHWEST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 32, 167.15 FEET SOUTHWEST OF STATION MARCOUX, 74.0 FEET NORTH OF TRUNK HIGHWAY 2, 2.2 FEET WEST OF A POWER POLE, 1.0 FOOT NORTH OF A WITNESS POST.

Station Notes

NO HORIZONTAL DUE TO MARK BEING UNDER TREE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1092.964	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1092.964	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1092.964	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1093.085	.016	2/1				VERTICAL CONTROL SURVEY	2012	VCROO
1093.085	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1093.266	.262		1005.037	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.363 12B = -88.327 09 = -88.228 03 = -88.225

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 36.31991	96 16 06.74504	524136.757	195298.588	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1845605.724	803658.107	836828.949	17371391.087	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX_RM_2-CP4254-3N-01OCT2019.jpg	N	Oct 1, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX_RM_2-CP4254-2-01OCT2019.jpg		Oct 1, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MARCOUX_RM_2-CP4254-1-01OCT2019.jpg		Oct 1, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MAT MNDT

NGS Name: MAT

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1376](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	16	150 N	42 W	474905.38	960151.89		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	PIPE CAP	MNDT

Description: (1977)

Stamping: MAT 1977

1.4 MILES WEST-NORTHWEST OF BROOKS, 1.4 MILES WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 AT BROOKS, 55.9 FEET SOUTH OF TRUNK HIGHWAY 92, 7.0 FEET WEST OF A GRAVEL ROAD, 42.3 FEET EAST-NORTHEAST OF A CABLE POST, 38.2 FEET EAST-NORTHEAST OF A RIGHT-OF-WAY POST.

Station Notes

FOUND THE IRON PIN BENT OVER.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1118.764	.197		1030.296	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1118.206						RECIPROCAL VERTICAL ANGLE	1977	HORZ

Geoid Separations(ft): GEOID18 = -88.884 12B = -88.825 09 = -88.733 03 = -88.697

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.37835	96 01 51.89365	582453.744	216646.741	.066	2	ADJUSTMENT	1999	17648
47 49 05.37600	96 01 51.88889	582454.070	216646.505	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 05.37592	96 01 51.88828	582454.111	216646.497	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 49 05.51092	96 01 50.75853			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1904764.458	822520.862	896034.379	17390185.125	.066	2	ADJUSTMENT	1999	17648
1904764.773	822520.612	896034.694	17390184.874	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1904764.815	822520.602	896034.735	17390184.864	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1280153.138	494446.613			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: MURRAY

NGS Name: MURRAY

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6441](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	150 N	42 W	474906.06	960347.62	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2011	2012	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: MURRAY 2011

2.95 MILES WEST OF BROOKS, 2.95 MILES WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY MILEPOINT 10.0, 10.5 FEET EAST OF A FIELD ENTRANCE, 56.0 FEET NORTH OF TRUNK HIGHWAY 92, 9.0 FEET SOUTH-SOUTHWEST OF A POWER POLE, 9.0 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1110.916	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1111.054	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1111.074			1022.222	.009	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1111.074			1022.222	.009	2011	GPS - STATIC	2013 HTERR
1111.054	.131		1022.406	.066	1996	GPS - STATIC	2012 HTERR
1110.989	.262		1022.318	.197	2007	GPS - RTRN	2011 RTRN2011

Geoid Separations(ft): GEOID18 = -88.822 12B = -88.763 09 = -88.671 03 = -88.648

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 06.06044	96 03 47.62006	574555.141	216683.208	.007		ADJUSTMENT	2013	GPS2946
47 49 06.06044	96 03 47.62006	574555.141	216683.208	.007	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 06.06112	96 03 47.62025	574555.128	216683.277	.131	3	GPS - RTRN	2011	RTRN2011

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 06.05996	96 03 47.62102	574555.076	216683.159	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1896875.527	822890.944	888143.281	17390565.590	.007		ADJUSTMENT	2013	GPS2946
1896875.527	822890.944	888143.281	17390565.590	.007	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1896875.517	822891.014	888143.271	17390565.659	.131	3	GPS - RTRN	2011	RTRN2011

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1896875.460	822890.898	888143.214	17390565.544	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MURRAY-DO6441-3N-11OCT2011.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MURRAY-DO6441-2-11OCT2011.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/MURRAY-DO6441-1-11OCT2011.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 11, 2011
	Oct 11, 2011
	Oct 11, 2011



Mn/DOT Name: N 319

NGS Name: N 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0005](#)

[Get Map](#)

NGS Quad / Sta Num : 47096114/

USGS Quad: PLUMMER NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	36	152 N	44 W	475602.04	961326.92	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1940	2023	GOOD	Horz=YES Vert=YES	YES		PROJECTS 10 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1998)

Stamping: N 319 1940

4.25 MILES NORTHEAST OF RED LAKE FALLS, 5.6 MILES NORTHEAST ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 13 AT THE NORTHEAST EDGE OF RED LAKE FALLS, AT TRUNK HIGHWAY 32 MILEPOINT 90.95, 134.5 FEET WEST OF TRUNK HIGHWAY 32, 40.0 FEET WEST OF AN OLD RAILROAD GRADE, 45.0 FEET NORTH OF A ROAD, 39.43 FEET NORTHWEST OF STATION ISAAC MNDT, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1071.953	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1072.206	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1072.206	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1072.340	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32
1071.953	.007	1				VERTICAL CONTROL SURVEY	1993 POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1070.674	.007	1/2				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1070.674	.007	1				VERTICAL CONTROL SURVEY	1941 Q470961
1070.674	.007	1				VERTICAL CONTROL SURVEY	1940 L56 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1072.376	.262		983.187	.197	2011	GPS - OPUS	2020 GPSBM
1072.163	.262		983.112	.197	2011	GPS - RTRN	2020 RTRN2020
1072.170	.262		982.980	.197	2011	GPS - RTRN	2019 RTRN2019
1072.170	.262		983.121	.197	2011	GPS - RTRN	2018 RTRN2018
			983.184	.010	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
1072.235	.262		983.141	.197	1996	GPS - RTRN	2008 RTRN2008
			983.299	.010	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1072.340	.131		983.262	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1663
1072.340	.131		983.262	.066	1996	GPS - STATIC	2001 H3986

Geoid Separations(ft): GEOID18 = -89.193 12B = -89.048 09 = -89.042 03 = -89.094

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 02.04115	96 13 26.91646	534940.391	258722.198	.131	3	GPS - OPUS	2020	GPSBM
47 56 02.04141	96 13 26.91608	534940.417	258722.224	.131	3	GPS - RTRN	2020	RTRN2020
47 56 02.03936	96 13 26.91755	534940.318	258722.016	.131	3	GPS - RTRN	2019	RTRN2019
47 56 02.04144	96 13 26.91597	534940.425	258722.227	.131	3	GPS - RTRN	2018	RTRN2018
47 56 02.04183	96 13 26.91508	534940.485	258722.267	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 02.04177	96 13 26.91608	534940.417	258722.261	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 02.04093	96 13 26.91581	534940.436	258722.176	.131	3	GPS - RTRN	2008	RTRN2008
47 56 02.04174	96 13 26.91599	534940.423	258722.258	.033	C	ADJUSTMENT	2002	GPS1663
47 56 02.04174	96 13 26.91599	534940.423	258722.258	.033	C	GPS - STATIC	2001	H3986

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859077.362	866560.063	850389.425	17434301.703	.131	3	GPS - OPUS	2020	GPSBM
1859077.389	866560.089	850389.452	17434301.728	.131	3	GPS - RTRN	2020	RTRN2020
1859077.281	866559.885	850389.344	17434301.525	.131	3	GPS - RTRN	2019	RTRN2019
1859077.397	866560.091	850389.460	17434301.731	.131	3	GPS - RTRN	2018	RTRN2018
1859077.459	866560.128	850389.522	17434301.768	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859077.390	866560.125	850389.454	17434301.765	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1859077.406	866560.039	850389.469	17434301.679	.131	3	GPS - RTRN	2008	RTRN2008
1859077.396	866560.122	850389.460	17434301.761	.033	C	ADJUSTMENT	2002	GPS1663
1859077.396	866560.122	850389.460	17434301.761	.033	C	GPS - STATIC	2001	H3986

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/N_319-SL0005-3N-09OCT2019.jpg	N	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/N_319-SL0005-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/N_319-SL0005-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: NEILSON

NGS Name: NEILSON

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DP0873](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	36	150 N	43 W	474536.84	960546.01		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: NEILSON 2008

6.0 MILES SOUTHWEST OF BROOKS, 4.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, THEN 4.5 MILES WEST ON COUNTY ROAD 49, 500.0 FEET SOUTH OF ENBRIDGE PIPELINE MARKER NUMBER 250, 81.2 FEET NORTH OF COUNTY ROAD 49, 19.0 FEET EAST OF A FIRE DEPARTMENT CROSSING, 1.5 FEET WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1130.549	.262		1042.144	.197	2011	GPS - OPUS	2020	GPSBM
1130.519	.262		1042.114	.197	2011	GPS - OPUS	2020	GPSBM
1130.359	.262		1042.025	.197	2011	GPS - RTRN	2020	RTRN2020
1130.362			1042.025	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1130.487	.131		1042.144	.066	1996	GPS - STATIC	2013	HPLK1
1130.362			1042.025	.018	2011	GPS - STATIC	2013	HPLK1

Geoid Separations(ft): GEOID18 = -88.405 12B = -88.333 09 = -88.225 03 = -88.268

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 45 36.83822	96 05 46.01130	566549.163	195452.263	.131	3	GPS - OPUS	2020	GPSBM
47 45 36.83833	96 05 46.01159	566549.144	195452.274	.131	3	GPS - OPUS	2020	GPSBM
47 45 36.83865	96 05 46.01044	566549.222	195452.307	.131	3	GPS - RTRN	2020	RTRN2020
47 45 36.83875	96 05 46.01043	566549.223	195452.317	.030		ADJUSTMENT	2013	GPS2970
47 45 36.83875	96 05 46.01043	566549.223	195452.317	.030	C	GPS - STATIC	2013	HPLK1

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 45 36.83840	96 05 46.01141	566549.156	195452.281	.033	C	GPS - STATIC	2013	HPLK1

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1887980.955	802020.045	879218.830	17369698.797	.131	3	GPS - OPUS	2020	GPSBM
1887980.936	802020.057	879218.811	17369698.808	.131	3	GPS - OPUS	2020	GPSBM
1887981.015	802020.087	879218.891	17369698.838	.131	3	GPS - RTRN	2020	RTRN2020
1887981.016	802020.097	879218.892	17369698.848	.030		ADJUSTMENT	2013	GPS2970
1887981.016	802020.097	879218.892	17369698.848	.030	C	GPS - STATIC	2013	HPLK1

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1887980.948	802020.064	879218.824	17369698.815	.033	C	GPS - STATIC	2013	HPLK1



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/NEILSON-DP0873-3N-16JUN2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/NEILSON-DP0873-2-16JUN2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/NEILSON-DP0873-1-16JUN2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jun 16, 2020
	Jun 16, 2020
	Jun 16, 2020



Mn/DOT Name: NIN MNDT

NGS Name: NIN

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0048](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	33	152 N	42 W	475605.16	960308.98	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 2 IN.	STEEL ROD IMBED IN MON

Monument Type

UNKNOWN

Disk Type

HORIZONTAL CONTROL DISK

Mon. Agency

MNDT

Description: (2008)

Stamping: NIN 1977

1.75 MILES NORTH-NORTHWEST OF PLUMMER, 2.2 MILES NORTH-NORTHWEST ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 343.1, 1.75 MILES NORTH OF COUNTY ROAD 124, 72.4 FEET EAST OF TRUNK HIGHWAY 59, 42.0 FEET NORTH OF A GRAVEL ROAD, 5.2 FEET SOUTH-SOUTHWEST OF A TELEPHONE POLE, 35.84 FEET WEST-NORTHWEST OF NIN MNDT RM 1, 36.58 FEET SOUTH-SOUTHEAST OF NIN MNDT RM 2, 1.1 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.736	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1119.486	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1120.916			1031.642	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1120.916			1031.642	.018	2011	GPS - STATIC	2013	HTERR
1120.897	.131		1031.783	.066	1996	GPS - STATIC	2012	HTERR
1120.743	.262		1031.615	.197	1996	GPS - RTRN	2008	RTRN2008
1120.733	.197		1031.907	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.285 12B = -89.173 09 = -89.121 03 = -89.127

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 56 05.15910	96 03 08.98035	577019.668	259162.476	.016		ADJUSTMENT	2013	GPS2946
47 56 05.15910	96 03 08.98035	577019.668	259162.476	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 56 05.15884	96 03 08.98149	577019.590	259162.450	.033	C	GPS - STATIC	2012	HTERR
47 56 05.15985	96 03 08.98132	577019.602	259162.552	.131	3	GPS - RTRN	2008	RTRN2008
47 56 05.16036	96 03 08.97742	577019.867	259162.605	.066	2	ADJUSTMENT	1999	17648
47 56 05.15744	96 03 08.97157	577020.266	259162.310	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 56 05.15729	96 03 08.97185	577020.247	259162.295	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 56 05.28718	96 03 07.85351			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901131.927	865222.379	892457.713	17432905.654	.016		ADJUSTMENT	2013	GPS2946
1901131.927	865222.379	892457.713	17432905.654	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901131.848	865222.356	892457.634	17432905.631	.033	C	GPS - STATIC	2012	HTERR
1901131.864	865222.458	892457.650	17432905.733	.131	3	GPS - RTRN	2008	RTRN2008
1901132.131	865222.499	892457.918	17432905.774	.066	2	ADJUSTMENT	1999	17648
1901132.518	865222.188	892458.304	17432905.463	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901132.498	865222.174	892458.284	17432905.448	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1276519.688	537147.588			.100	2	CLASSICAL SURVEY	1978	16128

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/NIN-SL0048-3E-25AUG2008.jpg	E	Aug 25, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/NIN-SL0048-2-25AUG2008.jpg		Aug 25, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/NIN-SL0048-1-25AUG2008.jpg		Aug 25, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: NIN MNDT RM 1

NGS Name: NIN RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0049](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	33	152 N	42 W	475605.11	960308.46	2		1977	2008	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1977) Stamping: NIN NO 1 1977

1.75 MILES NORTH-NORTHWEST OF PLUMMER, 2.2 MILES NORTH-NORTHWEST ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 343.20, 103.0 FEET EAST OF TRUNK HIGHWAY 59, 37.0 FEET NORTH OF AN EAST-WEST TOWNSHIP ROAD, 35.7 FEET EAST-SOUTHEAST OF A TELEPHONE POLE, 35.8 FEET EAST-SOUTHEAST OF STATION NIN MNDT, 64.0 FEET SOUTHEAST OF NIN MNDT RM 2, 32.8 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1119.860	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1118.610	.016	2					VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.285 12B = -89.176 09 = -89.121 03 = -89.127									
* No Horizontal Positions in the Database *									



Mn/DOT Name: NIN MNDT RM 2

NGS Name: NIN RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0047](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	33	152 N	42 W	475605.48	960309.22	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2008	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1977)

Stamping: NIN NO 2 1977

1.75 MILES NORTH-NORTHWEST OF PLUMMER, 2.2 MILES NORTH-NORTHWEST ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 343.20, 71.6 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 59, 77.0 FEET NORTH OF A GRAVEL TOWNSHIP ROAD, 32.5 FEET NORTH-NORTHWEST OF A TELEPHONE POLE, 36.6 FEET NORTH-NORTHWEST OF STATION NIN MNDT, 64.0 FEET NORTHWEST OF NIN MNDT RM 1, 37.0 FEET NORTH-NORTHWEST OF A WITNESS POST.

Station Notes

FOUND THE DISK MISSING AND THE CONCRETE BROKEN, PART OF THE STEM WAS LEFT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1120.989	.016	2/1				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1119.739	.016	2				VERTICAL CONTROL SURVEY		1978	L24405

Geoid Separations(ft): GEOID18 = -89.285 12B = -89.176 09 = -89.121 03 = -89.127

* No Horizontal Positions in the Database *



Mn/DOT Name: OKLEE

NGS Name: OKLEE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1096](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/1010
USGS Quad: OKLEE SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	10	150 N	41 W	474908.87	955320.58		1

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1941	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1964) **Stamping:** OKLEE 1941

2.1 MILES SOUTHWEST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 1.4 MILES WEST ALONG TRUNK HIGHWAY 92 WEST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88						Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1148.292	.131		1059.493	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29						Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1148.292						RECIPROCAL VERTICAL ANGLE	1941	HORZ

Geoid Separations(ft): GEOID18 = -89.209 12B = -89.189 09 = -89.081 03 = -88.996

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				Red Lake County			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 08.86898	95 53 20.58497	617348.203	217184.031	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)				Red Lake County			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 08.86611	95 53 20.58032	617348.522	217183.742	.033	1	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 09.01100	95 53 19.49100			.100	3	CLASSICAL SURVEY	1965	USGS-HORZ
47 49 09.00714	95 53 19.48396			.100	1	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1939645.690	821583.582	930924.849	17389202.238	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)				UTM - Zone 15			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1939645.997	821583.279	930925.155	17389201.935	.033	1	ADJUSTMENT	1986	17289

NAD27							Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1315032.671	493510.493			.100	3	CLASSICAL SURVEY	1965	USGS-HORZ
1315033.137	493510.084			.100	1	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: OKLEE 2

NGS Name: OKLEE 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1095](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/1010
USGS Quad: OKLEE SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	10	150 N	41 W	474909.40	955319.53		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2008	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1964) **Stamping:** OKLEE 2 1964

2.0 MILES SOUTHWEST OF OKLEE, 1.4 MILES WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222, 92.4 FEET NORTH OF TRUNK HIGHWAY 92, 91.0 FEET EAST OF A TELEPHONE POLE, 50.8 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A HOUSE, 96.91 FEET EAST OF OKLEE RM 2, 114.51 FEET WEST OF OKLEE 2 RM 3, 96.0 FEET EAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1148.292	.197			1059.489	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1148.292							RECIPROCAL VERTICAL ANGLE	1964	HORZ

Geoid Separations(ft): GEOID18 = -89.209 12B = -89.189 09 = -89.081 03 = -88.996

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 09.40059	95 53 19.53476	617419.544	217238.343	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 09.39781	95 53 19.52991	617419.877	217238.063	.066	2	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 49 09.53875	95 53 18.43380			.100	2	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1939719.252	821634.824	930998.498	17389253.399	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1939719.573	821634.530	930998.818	17389253.105	.066	2	ADJUSTMENT	1986	17289

NAD27							Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1315106.698	493561.327			.100	2	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: OKLEE 2 AZ MK

NGS Name: OKLEE 2 AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4422](#)

[Get Map](#)

NGS Quad / Sta Num : 47095443/

USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	14	150 N	41 W	474907.63	955247.26	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2012	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2011)

Stamping: OKLEE 2 1964

1.5 MILES SOUTHWEST OF OKLEE, 1.0 MILE WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222, AT TRUNK HIGHWAY 92 MILEPOINT 18.55, 79.0 FEET SOUTH OF TRUNK HIGHWAY 92, 50.0 FEET EAST OF A TRACK ROAD, 3.0 FEET SOUTH-SOUTHWEST OF A RIGHT-OF-WAY POST, 2.7 FEET WEST OF A POWER POLE, 1.4 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1151.855	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1151.963	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1152.071			1062.816	.009	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1152.071			1062.800	.009	2011	GPS - STATIC	2013	HTERR
1151.966	.131		1062.951	.066	1996	GPS - STATIC	2012	HTERR
			1062.816	.012	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1151.904	.262		1062.892	.197	1996	GPS - RTRN	2008	RTRN2008
			1062.938	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1151.933	.131		1062.944	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1894
1151.933	.131		1062.944	.066	1996	GPS - STATIC	2003	HBAGL

Geoid Separations(ft): GEOID18 = -89.222 12B = -89.206 09 = -89.098 03 = -89.012

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 07.63026	95 52 47.25923	619623.409	217072.701	.010		ADJUSTMENT	2013	GPS2946
47 49 07.63031	95 52 47.25907	619623.420	217072.706	.010	C	GPS - STATIC	2013	HTERR
47 49 07.63026	95 52 47.25923	619623.409	217072.701	.016		ADJUSTMENT	2012	GPS2800

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 07.63036	95 52 47.25984	619623.367	217072.711	.023		ADJUSTMENT	2007	GPS2300

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 07.63003	95 52 47.25997	619623.359	217072.677	.033	C	GPS - STATIC	2012	HTERR
47 49 07.63087	95 52 47.26050	619623.322	217072.762	.131	3	GPS - RTRN	2008	RTRN2008
47 49 07.63003	95 52 47.25997	619623.359	217072.677	.033	C	ADJUSTMENT	2003	GPS1894
47 49 07.63003	95 52 47.25997	619623.359	217072.677	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1941913.851	821376.256	933193.351	17388991.911	.010		ADJUSTMENT	2013	GPS2946
1941913.862	821376.261	933193.362	17388991.916	.010	C	GPS - STATIC	2013	HTERR
1941913.851	821376.256	933193.351	17388991.911	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1941913.810	821376.268	933193.310	17388991.923	.023		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1941913.800	821376.235	933193.300	17388991.890	.033	C	GPS - STATIC	2012	HTERR
1941913.767	821376.321	933193.267	17388991.976	.131	3	GPS - RTRN	2008	RTRN2008
1941913.800	821376.235	933193.300	17388991.890	.033	C	ADJUSTMENT	2003	GPS1894
1941913.800	821376.235	933193.300	17388991.890	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/OKLEE_2_AZ_MK-CP4422-3S-20AUG2008.jpg	S	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/OKLEE_2_AZ_MK-CP4422-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/OKLEE_2_AZ_MK-CP4422-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: OKLEE 2 RM 3

NGS Name: OKLEE 2 RM 3

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4424](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	150 N	41 W	474909.14	955317.90		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2008	NOT FOUND	Horz=? Vert=YES	NO		FLUSH	SEE DESCRIPTION

Monument Type
UNKNOWN

Disk Type
REFERENCE MARK DISK

Mon. Agency
CGS

Description: (1964)

Stamping: OKLEE 2 NO 3 1964

2.0 MILES SOUTHWEST OF OKLEE, 1.4 MILES WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222, 114.51 FEET EAST OF STATION OKLEE 2, 100.0 FEET WEST OF A TELEPHONE POLE, 68.0 FEET NORTH OF TRUNK HIGHWAY 92.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.212 12B = -89.193 09 = -89.084 03 = -88.999



Mn/DOT Name: OKLEE AZ MK RESET

NGS Name: OKLEE AZ MK RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4419](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	150 N	41 W	474908.00	955253.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1964	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

AZIMUTH MARK DISK

Mon. Agency

CGS

Description: (1941)

Stamping: OKLEE 1941

2.1 MILES SOUTHWEST OF OKLEE, 1.6 MILES SOUTH ALONG TRUNK HIGHWAY 222 FROM THE JUNCTION OF TRUNK HIGHWAY 222 AND A RAILROAD IN OKLEE, THEN 1.5 MILES WEST ALONG TRUNK HIGHWAY 92, 40.0 FEET SOUTH OF TRUNK HIGHWAY 92, 49.0 FEET EAST OF THE PROLONGED CENTERLINE OF A TEE-ROAD NORTH, 3.5 FEET WEST OF A STANDARD REFERENCE POST.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.222 12B = -89.203 09 = -89.094 03 = -89.009



Mn/DOT Name: OKLEE CH OF ST FRANCIS XAVIER

NGS Name: OKLEE CH OF ST FRANCIS XAVIER

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1093](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/1013
USGS Quad: OKLEE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	1	150 N	41 W	475018.61	955122.11		4

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1941	1941	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
BLANK	CHURCH SPIRE	NGS

Description: (1941)

Stamping:

IN THE SOUTHWEST PART OF OKLEE, 377.0 FEET WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 305.0 FEET SOUTH ALONG GOVERNOR STREET, THE MOST PROMINENT SPIRE IN TOWN. THE SPIRE AND THE BELFRY ARE PAINTED WHITE AND OF WOOD CONSTRUCTION, CROSS AT THE APEX OF THE SPIRE, 70.0 FEET HIGH.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.383 12B = -89.350 09 = -89.249 03 = -89.180

Lat/Lon and County Coordinates (Feet)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 50 18.61317	95 51 22.11233	625387.036	224302.982	.328	4	ADJUSTMENT	1999	17648

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 50 18.60989	95 51 22.10816	625387.323	224302.651	.328	4	ADJUSTMENT	1986	17289

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 50 18.74965	95 51 21.02277			.100	4	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1947976.969	828355.625	939267.162	17395965.205	.328	4	ADJUSTMENT	1999	17648

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1947977.241	828355.283	939267.434	17395964.863	.328	4	ADJUSTMENT	1986	17289

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1323363.849	500281.993			.100	4	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: OKLEE MUNICIPAL TANK

NGS Name: OKLEE MUNICIPAL TANK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1094](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/1014
USGS Quad: OKLEE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	1	150 N	41 W	475022.71	955112.33		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1964	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	ELEVATED TANK	NGS

Description: (1964)

Stamping:

IN OKLEE, 233.0 FEET EAST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, 250.0 FEET WEST OF MAIN STREET, 25.0 FEET WEST OF AN ALLEY, 130.0 FEET NORTH OF AN EAST-WEST STREET.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.396 12B = -89.360 09 = -89.262 03 = -89.193

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>					
47 50 22.70936	95 51 12.32534	626051.972	224722.477	.328	4	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>					
47 50 22.70633	95 51 12.32099	626052.271	224722.172	.328	4	ADJUSTMENT	1986	17289
<u>NAD27</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
47 50 22.84683	95 51 11.22805			.100	4	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>					
1948658.941	828746.600	939949.822	17396355.387	.328	4	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>					
1948659.226	828746.282	939950.107	17396355.069	.328	4	ADJUSTMENT	1986	17289
<u>NAD27</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>							
1324046.370	500673.049			.100	4	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: OKLEE RM 1

NGS Name: OKLEE RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4420](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	150 N	41 W	474908.74	955319.41		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1964	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

REFERENCE MARK DISK

Mon. Agency

CGS

Description: (1941)

Stamping: OKLEE NO 1 1941

2.0 MILES SOUTHWEST OF OKLEE, 1.4 MILES WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222, 97.0 FEET EAST OF THE SOUTHWEST FENCE CORNER, 1.0 FOOT NORTH OF THE SOUTH YARD FENCE.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.209 12B = -89.186 09 = -89.078 03 = -88.996



Mn/DOT Name: OKLEE RM 2

NGS Name: OKLEE RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4421](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	150 N	41 W	474909.60	955320.92		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	2008	NOT FOUND	Horz=? Vert=YES	NO		FLUSH	SEE DESCRIPTION

Monument Type

UNKNOWN

Disk Type

REFERENCE MARK DISK

Mon. Agency

CGS

Description: (1964)

Stamping: OKLEE NO 2 1941

2.0 MILES SOUTHWEST OF OKLEE, 1.4 MILES WEST ON TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222, 50.0 FEET SOUTHWEST OF THE SOUTHWEST CORNER OF A SMALL WHITE HOUSE, 35.5 FEET NORTH OF A TELEPHONE POLE, 1.1 FEET NORTH OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.209 12B = -89.189 09 = -89.081 03 = -88.996



Mn/DOT Name: OKLEE SALEM LUTHERAN CHURCH

NGS Name: OKLEE SALEM LUTHERAN CHURCH

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1092](#) [Get Map](#)
NGS Quad / Sta Num : 47095442/1021
USGS Quad: OKLEE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	25	151 N	41 W	475225.85	955036.64		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1964	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	CHURCH SPIRE	NGS

Description: (1964)

Stamping:

2.5 MILES NORTH-NORTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 MILE NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 0.7 MILE EAST ALONG COUNTY ROAD 135.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.609 12B = -89.560 09 = -89.472 03 = -89.406

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 25.84964	95 50 36.63623	628402.256	237216.805	.328	4	ADJUSTMENT	1999	17648

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 25.84649	95 50 36.63126	628402.597	237216.488	.328	4	ADJUSTMENT	1986	17289

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 25.98969	95 50 35.54823			.100	4	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1951534.594	841128.786	942842.553	17408736.922	.328	4	ADJUSTMENT	1999	17648

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1951534.921	841128.455	942842.880	17408736.591	.328	4	ADJUSTMENT	1986	17289

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1326921.425	513055.498			.100	4	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: P 319

NGS Name: P 319

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0004](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	25	152 N	44 W	475654.10	961326.76	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1940	2023	GOOD	Horz=YES Vert=YES	YES		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2008) **Stamping:** P 319 1940

4.6 MILES SOUTH-SOUTHWEST OF ST. HILAIRE, 4.4 MILES SOUTH ON A RAILROAD FROM ST. HILAIRE, 4.9 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 3 IN ST. HILAIRE, TO TRUNK HIGHWAY 32 MILEPOINT 92.05, THEN 0.3 MILE WEST ON 150TH STREET SOUTHEAST, 42.0 FEET WEST OF A FIELD ENTRANCE, 39.0 FEET NORTH OF A ROAD, 23.0 FEET NORTHWEST OF THE WEST END OF A CORRUGATED METAL PIPE, 1.8 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1071.871	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1072.002	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1072.002	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1072.140	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32
1071.871	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1070.588	.007	1/2				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1070.588	.007	1				VERTICAL CONTROL SURVEY	1941	Q470961
1070.588	.007	1				VERTICAL CONTROL SURVEY	1940	L56 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1071.927	.262		982.738	.197	2011	GPS - RTRN	2019	RTRN2019
1071.976	.262		982.921	.197	2011	GPS - RTRN	2018	RTRN2018
1072.140			982.980	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1072.140			982.980	.011	2011	GPS - STATIC	2013	HTERR
1072.144	.131		983.046	.066	1996	GPS - STATIC	2012	HTERR
1072.166	.262		983.069	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -89.189 12B = -89.055 09 = -89.045 03 = -89.094

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 54.10026	96 13 26.76190	534941.186	263997.649	.131	3	GPS - RTRN	2019	RTRN2019
47 56 54.10149	96 13 26.76651	534940.872	263997.773	.131	3	GPS - RTRN	2018	RTRN2018
47 56 54.10204	96 13 26.76574	534940.924	263997.829	.013		ADJUSTMENT	2013	GPS2946
47 56 54.10204	96 13 26.76574	534940.924	263997.829	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 56 54.10194	96 13 26.76667	534940.861	263997.819	.033	C	GPS - STATIC	2012	HTERR
47 56 54.10224	96 13 26.76611	534940.899	263997.849	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1859301.001	871830.051	850620.447	17439573.526	.131	3	GPS - RTRN	2019	RTRN2019
1859300.692	871830.188	850620.139	17439573.663	.131	3	GPS - RTRN	2018	RTRN2018
1859300.747	871830.242	850620.194	17439573.717	.013		ADJUSTMENT	2013	GPS2946
1859300.747	871830.242	850620.194	17439573.717	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1859300.683	871830.235	850620.130	17439573.709	.033	C	GPS - STATIC	2012	HTERR
1859300.722	871830.263	850620.169	17439573.738	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/P_319-SL0004-3W-09OCT2019.jpg	W	Oct 9, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/P_319-SL0004-2-09OCT2019.jpg		Oct 9, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/P_319-SL0004-1-09OCT2019.jpg		Oct 9, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PARISH MNDT

NGS Name: PARISH

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DF7306](#)

[Get Map](#)

NGS Quad / Sta Num : 47095442/

USGS Quad: OKLEE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	23	150 N	41 W	474724.32	955210.48		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2008	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2002)

Stamping: PARISH 2002

3.0 MILES SOUTH-SOUTHWEST OF OKLEE, 2.0 MILES SOUTH ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222 (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), TO TRUNK HIGHWAY 92 MILEPOINT 21.55, 0.5 MILE WEST ON A ROAD, 66.6 FEET NORTH OF A ROAD, 43.4 FEET WEST OF A ROAD, 22.7 FEET SOUTH OF AN ENTRANCE, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

FOUND THE DISK OFF - REPLACED WITH A NEW DISK, SEE PARISH MNDT RESET.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
			1077.711	.008	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
			1077.836	.009	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1166.796	.131		1077.842	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1894
1166.796	.131		1077.842	.066	1996	GPS - STATIC		2003	HBAGL

Geoid Separations(ft): GEOID18 = -89.160 12B = -89.134 09 = -89.019 03 = -88.957

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 24.31769	95 52 10.47941	622200.903	206619.919	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 24.31762	95 52 10.48035	622200.838	206619.911	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 24.31729	95 52 10.48046	622200.831	206619.878	.033	C	ADJUSTMENT	2003	GPS1894
47 47 24.31729	95 52 10.48046	622200.831	206619.878	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1944047.142	810825.356	935313.598	17378435.458	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1944047.078	810825.351	935313.534	17378435.453	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1944047.069	810825.318	935313.525	17378435.420	.033	C	ADJUSTMENT	2003	GPS1894
1944047.069	810825.318	935313.525	17378435.420	.033	C	GPS - STATIC	2003	HBAGL



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PARISH-DF7306-3W-06MAY2008.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PARISH-DF7306-2-06MAY2008.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PARISH-DF7306-1-06MAY2008.jpg

<u>Dir</u>	<u>Date</u>
W	May 6, 2008
	May 6, 2008
	May 6, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PARISH MNDT RESET

NGS Name: PARISH RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6431](#)
NGS Quad / Sta Num : 47095442/
USGS Quad: OKLEE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	23	15 N	41 W	474724.32	955210.48	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2008	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2011)

Stamping: PARISH RESET 2008

3.0 MILES SOUTH-SOUTHWEST OF OKLEE, 7.0 MILES SOUTH ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 222 (THE JUNCTION IS 1.0 MILE SOUTH OF OKLEE), AT TRUNK HIGHWAY 92 MILEPOINT 21.55, THEN 0.5 MILE WEST ON A GRAVEL ROAD, 66.6 FEET NORTH OF A ROAD, 43.4 FEET WEST OF A ROAD, 22.7 FEET SOUTH OF AN ENTRANCE, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1166.845	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941	
1166.927	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1167.025			1077.823	.008	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946	
1167.025			1077.823	.008	2011	GPS - STATIC	2013	HTERR	
1166.927	.131		1077.967	.066	1996	GPS - STATIC	2012	HTERR	

Geoid Separations(ft): GEOID18 = -89.160 12B = -89.134 09 = -89.019 03 = -88.957

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 47 24.31744	95 52 10.47914	622200.921	206619.894	.010		ADJUSTMENT	2013	GPS2946
47 47 24.31744	95 52 10.47914	622200.921	206619.894	.010	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 47 24.31703	95 52 10.47993	622200.867	206619.852	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
1944047.160	810825.330	935313.616	17378435.432	.010		ADJUSTMENT	2013	GPS2946
1944047.160	810825.330	935313.616	17378435.432	.010	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
1944047.104	810825.291	935313.560	17378435.392	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PARISH_RESET-DO6431-3W-20AUG2008.jpg	W	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PARISH_RESET-DO6431-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PARISH_RESET-DO6431-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PIER MNDT

NGS Name: PIER

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1436](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	2	150 N	44 W	474957.17	961559.39		2	1979	2019	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (1979) Stamping: PIER 1979

3.5 MILES SOUTH OF RED LAKE FALLS, IN THE NORTHEAST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 32 MILEPOINT 82.1, 45.5 FEET EAST OF TRUNK HIGHWAY 32, 26.0 FEET NORTH OF TRUNK HIGHWAY 92, 96.6 FEET EAST OF CABLE POST S-10, 44.40 FEET SOUTH OF PIER MNDT RM 1, 114.70 FEET SOUTHWEST OF PIER MNDT RM 2, 49.8 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1053.147	.197			964.696	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1051.802							RECIPROCAL VERTICAL ANGLE	1979	HORZ

Geoid Separations(ft): GEOID18 = -88.901 12B = -88.822 09 = -88.766 03 = -88.766

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
47 49 57.16845	96 15 59.39062			524605.004	221731.752	.066	2	ADJUSTMENT	1999 17648
47 49 57.16639	96 15 59.38667			524605.274	221731.544	.066	2	ADJUSTMENT	1998 17655

<u>NAD83(1986)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
47 49 57.16602	96 15 59.38395			524605.459	221731.506	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
47 49 57.28294	96 15 58.21035					.100	2	CLASSICAL SURVEY	1981 16409

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
1847190.071	830044.278			838447.991	17397786.612	.066	2	ADJUSTMENT	1999 17648
1847190.332	830044.059			838448.251	17397786.392	.066	2	ADJUSTMENT	1998 17655

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
1847190.516	830044.013			838448.435	17397786.347	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Year</u> <u>Reference</u>
<u>X</u>	<u>Y</u>								
1222579.952	501967.895					.100	2	CLASSICAL SURVEY	1981 16409



Mn/DOT Name: PIER MNDT RM 1

NGS Name: PIER RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4500](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	2	150 N	44 W	474957.60	961559.31		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2019	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1979)

Stamping: PIER NO 1 1979

3.5 MILES SOUTH OF RED LAKE FALLS, IN THE NORTHEAST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 32 MILEPOINT 82.1, 106.0 FEET NORTH-NORTHEAST OF UNDERGROUND CABLE MARKER POST NUMBER S-10, 100.0 FEET SOUTH OF A RIGHT-OF-WAY POST, 70.0 FEET NORTH OF TRUNK HIGHWAY 92, 50.8 FEET EAST OF TRUNK HIGHWAY 32, 44.40 FEET NORTH OF STATION PIER MNDT, 5.3 FEET SOUTH OF A WITNESS POST.

Station Notes

USED ALL TIES/LOCATOR/PROBE, USED COGO COMPUTE POINT. NO EVIDENCE OF MARK. MARK FALLS IN DITCH BOTTOM.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.901 12B = -88.825 09 = -88.766 03 = -88.766



Mn/DOT Name: PIER MNDT RM 2

NGS Name: PIER RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4501](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	2	150 N	44 W	474957.61	961557.84	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2011) **Stamping:** PIER NO 2 1979

3.5 MILES SOUTH OF RED LAKE FALLS, IN THE NORTHEAST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 32 MILEPOINT 82.10, 114.7 FEET NORTHEAST OF STATION PIER, 150.8 FEET EAST OF TRUNK HIGHWAY 32, 72.0 FEET NORTH OF TRUNK HIGHWAY 92, 3.1 FEET SOUTH OF A RIGHT-OF-WAY AND A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1052.452	.016	2/1					VERTICAL ADJUSTMENT	2025	00000988
1052.452	.016	2/1					VERTICAL CONTROL SURVEY	2023	VRDLK
1052.554	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1052.675	.016	2/1					VERTICAL CONTROL SURVEY	2012	VTERR
1052.675	.016	2/1					VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1052.521	.262			963.623	.197	2011	GPS - RTRN	2019	RTRN2019
1052.675				963.751	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1052.675				963.751	.011	2011	GPS - STATIC	2013	HTERR
1052.688	.131			963.909	.066	1996	GPS - STATIC	2012	HTERR
1052.567	.262			963.801	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.901 12B = -88.822 09 = -88.766 03 = -88.766

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				Red Lake County				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 49 57.61451	96 15 57.84434			524710.451	221777.090	.131	3	GPS - RTRN	2019	RTRN2019
47 49 57.61570	96 15 57.84053			524710.710	221777.211	.013		ADJUSTMENT	2013	GPS2946
47 49 57.61570	96 15 57.84053			524710.710	221777.211	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)				Red Lake County				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 49 57.61519	96 15 57.84137			524710.653	221777.159	.033	C	GPS - STATIC	2012	HTERR
47 49 57.61491	96 15 57.84150			524710.644	221777.131	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
1847297.324	830085.115			838555.344	17397827.326	.131	3	GPS - RTRN	2019	RTRN2019
1847297.589	830085.225			838555.609	17397827.435	.013		ADJUSTMENT	2013	GPS2946
1847297.589	830085.225			838555.609	17397827.435	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
1847297.530	830085.176			838555.549	17397827.386	.033	C	GPS - STATIC	2012	HTERR
1847297.520	830085.148			838555.539	17397827.358	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PIER_RM_2-CP4501-3E-03OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PIER_RM_2-CP4501-2-03OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PIER_RM_2-CP4501-1-03OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
E	Oct 3, 2019
	Oct 3, 2019
	Oct 3, 2019



Mn/DOT Name: PLUM MNDT

NGS Name: PLUM

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: SL0062	Get Map
NW	22	151 N	42 W	475327.46	960138.51	2	2	NGS Quad / Sta Num : 47096111/ USGS Quad: PLUMMER	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=NO	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2012) **Stamping:** PLUM 1977

1.5 MILES SOUTHEAST OF PLUMMER, 1.05 MILES SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 339.85, 113.8 FEET WEST OF TRUNK HIGHWAY 59, 13.0 FEET SOUTH OF 190TH STREET SOUTHEAST (GRAVEL ROAD), 10.0 FEET EAST-NORTHEAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 51.2 FEET SOUTH-SOUTHWEST OF A POWER POLE, 37.5 FEET WEST-NORTHWEST OF A TELEPHONE POLE, 31.35 FEET SOUTH OF PLUM MNDT RM 1, 39.87 FEET EAST-SOUTHEAST OF PLUM MNDT RM 2, 6.1 FEET NORTH-NORTHWEST OF A WITNESS POST. STATION PLUM MNDT IS APPROXIMATELY 10.0 FEET FROM THE RAILROAD TRACKS.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1135.884	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1136.015	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1136.107	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1134.870	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1134.870	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1135.884	.262		1046.770	.197	2007	GPS - RTRN	2012	RTRN2012
1135.903	.262		1046.802	.197	1996	GPS - RTRN	2008	RTRN2008
1136.120	.197		1047.288	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1134.906						RECIPROCAL VERTICAL ANGLE	1977	HORZ

Geoid Separations(ft): GEOID18 = -89.275 12B = -89.170 09 = -89.114 03 = -89.098

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.46182	96 01 38.50781	583250.740	243208.418	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.46148	96 01 38.50682	583250.808	243208.384	.131	3	GPS - RTRN	2008	RTRN2008
47 53 27.46160	96 01 38.50760	583250.754	243208.395	.066	2	ADJUSTMENT	1999	17648
47 53 27.45900	96 01 38.50148	583251.172	243208.134	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.45876	96 01 38.50211	583251.130	243208.109	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 53 27.59140	96 01 37.38246			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1906682.653	849021.529	897988.251	17416691.925	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1906682.719	849021.492	897988.317	17416691.888	.131	3	GPS - RTRN	2008	RTRN2008
1906682.667	849021.506	897988.264	17416691.902	.066	2	ADJUSTMENT	1999	17648
1906683.074	849021.227	897988.671	17416691.623	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1906683.030	849021.205	897988.627	17416691.600	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1282070.575	520946.945			.100	2	CLASSICAL SURVEY	1978	16128

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM-SL0062-3W-21AUG2008.jpg	W	Aug 21, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM-SL0062-2-21AUG2008.jpg		Aug 21, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM-SL0062-1-21AUG2008.jpg		Aug 21, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PLUM MNDT RM 1

NGS Name: PLUM RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0060](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

		<u>Reference</u>		<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>
NW	22	151 N	42 W	475327.76	960138.64	2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=NO	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2012)

Stamping: PLUM NO 1 1977

1.5 MILES SOUTHEAST OF PLUMMER, 1.05 MILES SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 339.85, 18.0 FEET NORTH OF AN EAST-WEST TOWNSHIP ROAD (190TH STREET SOUTHEAST), 37.3 FEET WEST-SOUTHWEST OF A POWER POLE, 31.35 FEET NORTH OF STATION PLUM MNDT, 11.0 FEET EAST-NORTHEAST OF THE NORTHEAST RAIL OF THE RAILROAD TRACKS, 4.3 FEET WEST OF A RAILROAD CROSSING POST, 1.0 FOOT SOUTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1135.857	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1135.989	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1136.071	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1134.837	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1134.837	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1135.893	.262		1046.779	.197	2007	GPS - RTRN	2012	RTRN2012
1135.867	.262		1046.766	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -89.275 12B = -89.173 09 = -89.114 03 = -89.101

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 53 27.75961	96 01 38.64116	583241.519	243238.554	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 53 27.75861	96 01 38.64147	583241.498	243238.453	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1906674.715	849052.024	897980.351	17416722.440	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1906674.690	849051.923	897980.326	17416722.340	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM_RM_1-SL0060-3N-21AUG2008.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM_RM_1-SL0060-2-21AUG2008.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM_RM_1-SL0060-1-21AUG2008.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Aug 21, 2008
	Aug 21, 2008
	Aug 21, 2008



Mn/DOT Name: PLUM MNDT RM 2

NGS Name: PLUM RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0061](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	22	151 N	42 W	475327.47	960139.09	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2012	GOOD	Horz=NO Vert=NO	YES		RECESSED 2 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2012)

Stamping: PLUM NO 2 1977

1.5 MILES SOUTHEAST OF PLUMMER, 1.05 MILES SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 339.85, 11.0 FEET SOUTH OF AN EAST-WEST TOWNSHIP ROAD, 78.0 FEET WEST-SOUTHWEST OF A POWER POLE, 44.7 FEET SOUTHWEST OF A RAILROAD CROSSING POST, 39.87 FEET WEST-NORTHWEST OF STATION PLUM MNDT, 22.3 FEET WEST-SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 5.5 FEET NORTHEAST OF A RAILROAD CROSSING POST, 2.5 FEET NORTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1135.218	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1135.349	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1135.490	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1134.253	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1134.253	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1135.250	.262		1046.136	.197	2007	GPS - RTRN	2012	RTRN2012
1135.218	.262		1046.120	.197	1996	GPS - RTRN	2008	RTRN2008

Geoid Separations(ft): GEOID18 = -89.275 12B = -89.170 09 = -89.114 03 = -89.098

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.47051	96 01 39.09386	583210.794	243209.123	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 53 27.46993	96 01 39.09374	583210.802	243209.064	.131	3	GPS - RTRN	2008	RTRN2008

State Plane and UTM Coordinates (Feet)

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1906642.779	849023.921	897948.366	17416694.372	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1906642.784	849023.862	897948.372	17416694.313	.131	3	GPS - RTRN	2008	RTRN2008



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM_RM_2-SL0061-3S-21AUG2008.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM_RM_2-SL0061-2-21AUG2008.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUM_RM_2-SL0061-1-21AUG2008.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Aug 21, 2008
	Aug 21, 2008
	Aug 21, 2008



Mn/DOT Name: PLUMMER

NGS Name: PLUMMER

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0055](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/1018
USGS Quad: PLUMMER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	9	151 N	42 W	475438.35	960209.66	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2012	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 8 IN.	STEEL SPIKE ADJ TO MON

Monument Type

UNKNOWN

Disk Type

TRIANGULATION STATION DISK

Mon. Agency

NGS

Description: (1977)

Stamping: PLUMMER 1964

AT THE SOUTHEAST EDGE OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 316.0 FEET SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 SOUTH, AT TRUNK HIGHWAY 59 MILEPOST 341.25, 0.1 MILE SOUTHEAST OF THE RAILROAD DEPOT, 0.05 MILE SOUTH OF A GAS STATION, 148.0 FEET EAST OF TRUNK HIGHWAY 59, 105.0 FEET SOUTHEAST OF A POWER POLE, 70.78 FEET EAST OF PLUMMER RM 1, 94.80 FEET SOUTH OF PLUMMER RM 2, 71.2 FEET EAST OF A WITNESS POST.

Station Notes

THE MARK FALLS UNDER A COMBINE HEAD NEXT TO A SHED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1129.473	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1128.229	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1129.460	.197		1040.631	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.298 12B = -89.189 09 = -89.134 03 = -89.124

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 38.35146	96 02 09.66119	581096.765	250382.736	.066	2	ADJUSTMENT	1999	17648
47 54 38.34881	96 02 09.65505	581097.184	250382.469	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 38.34851	96 02 09.65565	581097.144	250382.439	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 54 38.48046	96 02 08.53686			.100	2	CLASSICAL SURVEY	1964	13522



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1904833.953	856279.451	896148.754	17423954.715	.066	2	ADJUSTMENT	1999	17648
1904834.361	856279.167	896149.162	17423954.430	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1904834.319	856279.138	896149.120	17423954.401	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone							Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1280221.708	528204.789			.100	2	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: PLUMMER AZ MK

NGS Name: PLUMMER AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0056](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/1018
USGS Quad: PLUMMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	9	151 N	42 W	475420.61	960205.53	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2012)

Stamping: PLUMMER 1964

IN PLUMMER, IN THE NORTHWEST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1, AT TRUNK HIGHWAY 59 MILEPOINT 340.90, 190.5 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 59, 66.4 FEET NORTH OF COUNTY ROAD 1, 66.5 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1129.660	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1129.801	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD
1129.801	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1129.758	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1128.518	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1128.518	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1129.660			1040.526	.016	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1129.660	.131		1040.677	.066	1996	GPS - STATIC	2023	HERSK
1129.660			1040.526	.016	2011	GPS - STATIC	2023	HERSK
1129.867	.262		1040.575	.197	2011	GPS - OPUS	2020	GPSBM
1129.702	.262		1040.516	.197	2011	GPS - RTRN	2020	RTRN2020
1129.758			1040.526	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1129.758			1040.526	.018	2011	GPS - STATIC	2013	HTERR
1129.788	.131		1040.677	.066	1996	GPS - STATIC	2012	HTERR
1129.601	.262		1040.470	.197	2007	GPS - RTRN	2012	RTRN2012
1129.706	.262		1040.585	.197	1996	GPS - RTRN	2008	RTRN2008
1128.607	.197		1039.768	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.291 12B = -89.186 09 = -89.130 03 = -89.121

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.60519	96 02 05.52761	581386.100	248585.643	.010		ADJUSTMENT	2023	GPS3597
47 54 20.60519	96 02 05.52761	581386.100	248585.643	.010	C	GPS - STATIC	2023	HERSK
47 54 20.60496	96 02 05.52826	581386.056	248585.619	.131	3	GPS - OPUS	2020	GPSBM
47 54 20.60590	96 02 05.52716	581386.131	248585.715	.131	3	GPS - RTRN	2020	RTRN2020
47 54 20.60519	96 02 05.52761	581386.100	248585.643	.020		ADJUSTMENT	2013	GPS2946
47 54 20.60519	96 02 05.52761	581386.100	248585.643	.020	C	GPS - STATIC	2013	HTERR

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.60486	96 02 05.52924	581385.989	248585.608	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.60486	96 02 05.52861	581386.032	248585.609	.033	C	GPS - STATIC	2023	HERSK
47 54 20.60486	96 02 05.52861	581386.032	248585.609	.033	C	GPS - STATIC	2012	HTERR
47 54 20.60496	96 02 05.52770	581386.094	248585.619	.131	3	GPS - RTRN	2008	RTRN2008
47 54 20.60488	96 02 05.52594	581386.214	248585.612	.066	2	ADJUSTMENT	1999	17648
47 54 20.60223	96 02 05.51981	581386.633	248585.345	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 20.60196	96 02 05.52041	581386.592	248585.317	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 54 20.73396	96 02 04.40122			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1905047.078	854471.985	896359.498	17422146.368	.010		ADJUSTMENT	2023	GPS3597
1905047.078	854471.985	896359.498	17422146.368	.010	C	GPS - STATIC	2023	HERSK
1905047.033	854471.963	896359.453	17422146.346	.131	3	GPS - OPUS	2020	GPSBM
1905047.111	854472.055	896359.531	17422146.438	.131	3	GPS - RTRN	2020	RTRN2020
1905047.078	854471.985	896359.498	17422146.368	.020		ADJUSTMENT	2013	GPS2946
1905047.078	854471.985	896359.498	17422146.368	.020	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1905046.966	854471.956	896359.386	17422146.338	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1905047.009	854471.954	896359.429	17422146.337	.033	C	GPS - STATIC	2023	HERSK
1905047.009	854471.954	896359.429	17422146.337	.033	C	GPS - STATIC	2012	HTERR
1905047.071	854471.962	896359.491	17422146.345	.131	3	GPS - RTRN	2008	RTRN2008
1905047.191	854471.949	896359.610	17422146.332	.066	2	ADJUSTMENT	1999	17648
1905047.598	854471.665	896360.017	17422146.047	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1905047.556	854471.639	896359.976	17422146.021	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1280434.988	526397.299			.100	2	CLASSICAL SURVEY	1978	16128



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>		
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUMMER_AZ_MK-SL0056-3W-04OCT2018.jpg	W	Oct 4, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUMMER_AZ_MK-SL0056-2-04OCT2018.jpg		Oct 4, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUMMER_AZ_MK-SL0056-1-04OCT2018.jpg		Oct 4, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PLUMMER IMMANUEL LUTHERAN CH

NGS Name: PLUMMER IMMANUEL LUTHERAN CH

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1366](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/1020
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	9	151 N	42 W	475436.92	960234.86		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1964	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	CHURCH SPIRE	NGS

Description: (1964)

Stamping:

IN PLUMMER, 377.0 FEET SOUTH ALONG COUNTY ROAD 52 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 52 (MINNESOTA STREET) AND COUNTY ROAD 124 (CENTRAL AVENUE) IN PLUMMER, THEN 318.0 FEET WEST ALONG PLETH AVENUE.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.285 12B = -89.176 09 = -89.121 03 = -89.114

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 36.92128	96 02 34.85546	579380.918	250230.545	.328	4	ADJUSTMENT	1999	17648
47 54 36.91858	96 02 34.85066	579381.246	250230.273	.328	4	ADJUSTMENT	1998	17655

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 36.91835	96 02 34.85021	579381.277	250230.250	.328	4	ADJUSTMENT	1986	17289

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 54 37.05002	96 02 33.73055			.100	4	CLASSICAL SURVEY	1964	13522	

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1903113.444	856199.897	894427.570	17423877.470	.328	4	ADJUSTMENT	1999	17648
1903113.760	856199.611	894427.886	17423877.184	.328	4	ADJUSTMENT	1998	17655

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1903113.790	856199.587	894427.916	17423877.160	.328	4	ADJUSTMENT	1986	17289

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1278501.184	528125.203			.100	4	CLASSICAL SURVEY	1964	13522	



Mn/DOT Name: PLUMMER MUNICIPAL TANK

NGS Name: PLUMMER MUNICIPAL TANK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1365](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/1019
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	9	151 N	42 W	475438.12	960228.52		4	1964	1977	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	ELEVATED TANK	NGS

Description: (1972)

Stamping:

IN PLUMMER, 212.0 FEET SOUTH ALONG COUNTY ROAD 52 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 52 (MINNESOTA STREET) AND COUNTY ROAD 124 (CENTRAL AVENUE) IN PLUMMER, BALL AT THE APEX OF A CONICAL SHAPED ROOF ON A CYLINDRICAL TANK, SUPPORTED BY A 4-LEGGED STEEL STRUCTURE, 125.0 FEET IN HEIGHT, PAINTED SILVER WITH "PLUMMER" ON THE SIDE.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.288 12B = -89.180 09 = -89.124 03 = -89.117

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 38.12078	96 02 28.52279	579811.846	250353.906	.328	4	ADJUSTMENT	1999	17648
47 54 38.11812	96 02 28.51667	579812.264	250353.639	.328	4	ADJUSTMENT	1998	17655

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 38.11788	96 02 28.51720	579812.228	250353.614	.328	4	ADJUSTMENT	1986	17289

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 38.24936	96 02 27.40092			.100	4	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1903549.140	856304.928	894863.552	17423981.945	.328	4	ADJUSTMENT	1999	17648
1903549.546	856304.643	894863.959	17423981.659	.328	4	ADJUSTMENT	1998	17655

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1903549.509	856304.620	894863.922	17423981.637	.328	4	ADJUSTMENT	1986	17289

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1278936.685	528230.227			.100	4	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: PLUMMER RM 1

NGS Name: PLUMMER RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0053](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/1018
USGS Quad: PLUMMER

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	9	151 N	42 W	475438.12	960210.65	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2023	GOOD	Horz=YES Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2012) **Stamping:** PLUMMER NO 1 1964

0.25 MILE SOUTHEAST OF PLUMMER, 0.05 MILE SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND CENTRAL AVENUE WEST IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 341.25, 89.6 FEET SOUTH-SOUTHEAST OF A POWER POLE WITH GUY WIRES, 76.7 FEET EAST OF TRUNK HIGHWAY 59, 50.0 FEET SOUTHEAST OF THE SOUTH END OF A METAL CULVERT, 28.5 FEET SOUTHWEST OF THE SOUTHWEST CORNER OF A METAL SHED, 19.1 FEET NORTH-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1128.833	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1128.977	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD
1128.968	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1128.968	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1127.727	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1127.727	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1128.833			1039.690	.016	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1128.833	.131		1039.840	.066	1996	GPS - STATIC	2023	HERSK
1128.833			1039.690	.016	2011	GPS - STATIC	2023	HERSK
1128.968			1039.690	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1128.968			1039.690	.018	2011	GPS - STATIC	2013	HTERR
1128.813	.262		1039.680	.197	2007	GPS - RTRN	2012	RTRN2012
1128.968	.131		1039.840	.066	1996	GPS - STATIC	2012	HTERR
1128.794	.262		1039.670	.197	1996	GPS - RTRN	2008	RTRN2008
1128.607	.197		1039.765	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.294 12B = -89.189 09 = -89.134 03 = -89.124

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 38.11963	96 02 10.64533	581029.817	250358.957	.010		ADJUSTMENT	2023	GPS3597
47 54 38.11963	96 02 10.64533	581029.817	250358.957	.010	C	GPS - STATIC	2023	HERSK
47 54 38.11963	96 02 10.64533	581029.817	250358.957	.016		ADJUSTMENT	2013	GPS2946
47 54 38.11963	96 02 10.64533	581029.817	250358.957	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 38.12051	96 02 10.64557	581029.801	250359.046	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 38.11931	96 02 10.64637	581029.746	250358.924	.033	C	GPS - STATIC	2023	HERSK
47 54 38.11931	96 02 10.64637	581029.746	250358.924	.033	C	GPS - STATIC	2012	HTERR
47 54 38.11949	96 02 10.64711	581029.696	250358.942	.131	3	GPS - RTRN	2008	RTRN2008
47 54 38.11925	96 02 10.64066	581030.136	250358.920	.066	2	ADJUSTMENT	1999	17648
47 54 38.11659	96 02 10.63455	581030.553	250358.652	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 38.11630	96 02 10.63512	581030.514	250358.623	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 54 38.24824	96 02 09.51626			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1904766.070	856258.524	896080.820	17423933.874	.010		ADJUSTMENT	2023	GPS3597
1904766.070	856258.524	896080.820	17423933.874	.010	C	GPS - STATIC	2023	HERSK
1904766.070	856258.524	896080.820	17423933.874	.016		ADJUSTMENT	2013	GPS2946
1904766.070	856258.524	896080.820	17423933.874	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1904766.057	856258.614	896080.808	17423933.963	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1904765.998	856258.495	896080.748	17423933.844	.033	C	GPS - STATIC	2023	HERSK
1904765.998	856258.495	896080.748	17423933.844	.033	C	GPS - STATIC	2012	HTERR
1904765.949	856258.515	896080.699	17423933.864	.131	3	GPS - RTRN	2008	RTRN2008
1904766.387	856258.474	896081.137	17423933.823	.066	2	ADJUSTMENT	1999	17648
1904766.792	856258.189	896081.542	17423933.537	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1904766.752	856258.161	896081.502	17423933.509	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1280154.144	528183.811			.100	2	CLASSICAL SURVEY	1978	16128



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>	E	Sep 24, 2012
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUMMER_RM_1-SL0053-3E-24SEP2012.jpg		Sep 24, 2012
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUMMER_RM_1-SL0053-2-24SEP2012.jpg		Sep 24, 2012
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PLUMMER_RM_1-SL0053-1-24SEP2012.jpg		Sep 24, 2012
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: PLUMMER RM 2

NGS Name: PLUMMER RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0054](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	9	151 N	42 W	475439.29	960209.72	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 8 IN.	STEEL SPIKE ADJ TO MON

Monument Type

UNKNOWN

Disk Type

REFERENCE MARK DISK

Mon. Agency

MNDT

Description: (1977)

Stamping: PLUMMER NO 2 1964

AT THE SOUTHEAST EDGE OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 0.1 MILE SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 SOUTH, AT TRUNK HIGHWAY 59 MILEPOINT 341.25, 175.5 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 59, 99.4 FEET EAST OF A FENCE LINE, 84.5 FEET EAST OF A POWER POLE WITH GUY WIRES, 94.8 FEET NORTH OF STATION PLUMMER, 134.0 FEET NORTHEAST OF PLUMMER RM 1, 132.6 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1128.479	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1127.239	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Geoid Separations(ft): GEOID18 = -89.298 12B = -89.193 09 = -89.134 03 = -89.127

* No Horizontal Positions in the Database *



Mn/DOT Name: PLUMMER ST VINCENT DEPAUL CH

NGS Name: PLUMMER ST VINCENT DEPAUL CH

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1367](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/1021
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	9	151 N	42 W	475436.93	960236.62		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1964	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	CHURCH SPIRE	NGS

Description: (1964)

Stamping:

IN PLUMMER, 284.0 FEET SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 440.0 FEET WEST ALONG PLETH AVENUE.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.281 12B = -89.176 09 = -89.121 03 = -89.114

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 36.92878	96 02 36.62051	579260.663	250230.802	.328	4	ADJUSTMENT	1999	17648
47 54 36.92607	96 02 36.61570	579260.992	250230.528	.328	4	ADJUSTMENT	1998	17655

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 36.92585	96 02 36.61526	579261.022	250230.506	.328	4	ADJUSTMENT	1986	17289

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 54 37.05749	96 02 35.49551			.100	4	CLASSICAL SURVEY	1964	13522	

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1902993.324	856205.233	894307.417	17423882.972	.328	4	ADJUSTMENT	1999	17648
1902993.641	856204.947	894307.734	17423882.684	.328	4	ADJUSTMENT	1998	17655

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1902993.670	856204.923	894307.763	17423882.661	.328	4	ADJUSTMENT	1986	17289

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1278381.066	528130.536			.100	4	CLASSICAL SURVEY	1964	13522	



Mn/DOT Name: POP MNDT

NGS Name: POP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0084](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NW	26	150 N	42 W	474702.21	960003.41	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2005	DESTROYED	Horz=NO Vert=NO	NO			STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2002) **Stamping:** POP 1977

2.15 MILES SOUTH OF BROOKS, 2.45 MILES SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, 113.8 FEET WEST OF TRUNK HIGHWAY 59, 6.0 FEET NORTH OF AN ENTRANCE, 31.6 FEET WEST-SOUTHWEST OF A TELEPHONE POLE, 8.7 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 61.98 FEET NORTHEAST OF POP MNDT RM 1, 63.04 FEET SOUTHEAST OF POP MNDT RM 2, 3.8 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order/(Class)		Height	Acc	Adj	Determination Method	Year	Reference
1144.345	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order/(Class)		Height	Acc	Adj	Determination Method	Year	Reference
1143.160	.016	2					VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order/(Class)		Height	Acc	Adj	Determination Method	Year	Reference
1144.355	.197			1055.917	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -88.819 12B = -88.740 09 = -88.622 03 = -88.651

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				Red Lake County				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
47 47 02.20856	96 00 03.41188			589916.672	204199.309	.066	2	ADJUSTMENT	1999
47 47 02.20625	96 00 03.40688			589917.014	204199.076	.066	2	ADJUSTMENT	1998

NAD83(1986)				Red Lake County				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
47 47 02.20631	96 00 03.40670			589917.027	204199.082	.066	2	ADJUSTMENT	1986

NAD27								Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
47 47 02.34185	96 00 02.28243					.100	2	CLASSICAL SURVEY	1978

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
1911693.898	809770.994			902949.618	17377422.205	.066	2	ADJUSTMENT	1999
1911694.230	809770.748			902949.950	17377421.958	.066	2	ADJUSTMENT	1998

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
1911694.243	809770.753			902949.962	17377421.964	.066	2	ADJUSTMENT	1986

NAD27								Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
1287082.474	481696.884					.100	2	CLASSICAL SURVEY	1978



Mn/DOT Name: POP MNDT RM 1

NGS Name: POP RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL0083](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	26	150 N	42 W	474701.93	960004.22	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=NO	NO		RECESSED 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2012) **Stamping:** POP NO 1 1977

2.15 MILES SOUTH OF BROOKS, 2.45 MILES SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 332.25, 168.1 FEET WEST OF TRUNK HIGHWAY 59, 57.0 FEET SOUTH OF POP MNDT RM 2, 40.8 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 22.0 FEET SOUTH OF AN ENTRANCE NUMBER 26371.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1141.999	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1142.137	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1142.137	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1140.956	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1140.956	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1141.920	.262		1053.302	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -88.815 12B = -88.737 09 = -88.619 03 = -88.651

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 01.93053	96 00 04.22005	589861.611	204170.874	.131	3	GPS - RTRN	2012	RTRN2012

State Plane and UTM Coordinates (Feet)

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911637.692	809744.915	902893.362	17377396.190	.131	3	GPS - RTRN	2012	RTRN2012



Mn/DOT Name: POP MNDT RM 2

NGS Name: POP RM 2

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	26	150 N	42 W	474702.49	960004.23	2	3

NGS ACRN: [SL0082](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2012	GOOD	Horz=NO Vert=NO	NO		RECESSED 6 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2012)

Stamping: POP NO 2 1977

2.15 MILES SOUTH OF BROOKS, 2.45 MILES SOUTH ON TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92, AT TRUNK HIGHWAY 59 MILEPOINT 332.25, 169.8 FEET WEST OF TRUNK HIGHWAY 59, 57.0 FEET NORTH OF POP MNDT RM 1, 42.5 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 35.0 FEET NORTH OF ENTRANCE NUMBER 26371.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1141.687	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1141.819	.016	2/1				VERTICAL CONTROL SURVEY	2013	VMAHN
1141.819	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1140.634	.016	2/1				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1140.634	.016	2				VERTICAL CONTROL SURVEY	1978	L24405

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1141.573	.262		1052.951	.197	2007	GPS - RTRN	2012	RTRN2012

Geoid Separations(ft): GEOID18 = -88.815 12B = -88.737 09 = -88.622 03 = -88.651

Lat/Lon and County Coordinates (Feet)

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 02.49323	96 00 04.23223	589860.510	204227.890	.131	3	GPS - RTRN	2012	RTRN2012

State Plane and UTM Coordinates (Feet)

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911639.001	809801.918	902894.743	17377453.210	.131	3	GPS - RTRN	2012	RTRN2012



Mn/DOT Name: POPLAR

NGS Name: POPLAR

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8858](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	23	150 N	42 W	474753.01	960000.27		C	2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018) Stamping: POPLAR 2018

1.3 MILES SOUTH OF BROOKS, 1.5 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 333.25, 37.5 FEET EAST OF TRUNK HIGHWAY 59, 137.2 FEET SOUTHWEST OF A POWER POLE, 1.5 FEET WEST OF A WITNESS POST.

Station Pair: BROO MNDT - RED LAKE, MN

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order</u> (/Class)		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1132.239				1043.492	.029	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1132.255	.131			1043.633	.066	1996	GPS - STATIC	2023	HERSK
1132.239				1043.492	.029	2011	GPS - STATIC	2023	HERSK
1132.219	.262			1043.417	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -88.878 12B = -88.802 09 = -88.697 03 = -88.714

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
47 47 53.01380	96 00 00.27311			590106.615	209348.504	.013		ADJUSTMENT	2023 GPS3597
47 47 53.01380	96 00 00.27311			590106.615	209348.504	.013	C	GPS - STATIC	2023 HERSK
47 47 53.01307	96 00 00.27362			590106.581	209348.430	.131	3	GPS - RTRN	2018 RTRN2018

<u>NAD83(1996)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
47 47 53.01355	96 00 00.27384			590106.566	209348.479	.033	C	GPS - STATIC	2023 HERSK

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
1912101.158	814906.865			903363.597	17382559.180	.013		ADJUSTMENT	2023 GPS3597
1912101.158	814906.865			903363.597	17382559.180	.013	C	GPS - STATIC	2023 HERSK
1912101.121	814906.793			903363.559	17382559.108	.131	3	GPS - RTRN	2018 RTRN2018

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
1912101.108	814906.842			903363.546	17382559.157	.033	C	GPS - STATIC	2023 HERSK

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/POPLAR-DR8858-3E-22OCT2018.jpg	E	Oct 22, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/POPLAR-DR8858-2-22OCT2018.jpg		Oct 22, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/POPLAR-DR8858-1-22OCT2018.jpg		Oct 22, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PURATH 14

NGS Name: PURATH 14

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DN8408 NGS Quad / Sta Num : 47096142/ USGS Quad: MARCOUX CORNERS Get Map
NW	22	150 N	44 W	474811.68	961718.94	2	C	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 13 FT)	SURVEY DISK	MN-125

Description: (2012)

Stamping: PURATH 14 2008

5.1 MILES SOUTH OF RED LAKE FALLS, 5.3 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, THEN 1.0 MILE WEST ON COUNTY ROAD 14 (250TH STREET SOUTHWEST), 99.0 FEET WEST-SOUTHWEST OF A POWER POLE, 77.7 FEET SOUTH OF COUNTY ROAD 14 (250TH STREET SOUTHWEST), 68.5 FEET EAST-NORTHEAST OF A POWER POLE, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1054.827	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1054.578	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1054.709	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1054.827	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1054.831	.262		966.094	.197	2011	GPS - OPUS	2022	GPSBM
1054.857	.262		966.120	.197	2011	GPS - OPUS	2022	GPSBM
1054.808	.262		966.071	.197	2011	GPS - RTRN	2021	RTRN2021
1054.627	.262		965.890	.197	2011	GPS - RTRN	2019	RTRN2019
1054.827			966.071	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1054.827			966.071	.014	2011	GPS - STATIC	2013	HTERR
1054.821	.131		966.225	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.737 12B = -88.671 09 = -88.615 03 = -88.602

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 48 11.68200	96 17 18.94139	519187.916	211036.213	.131	3	GPS - OPUS
47 48 11.68175	96 17 18.94132	519187.921	211036.187	.131	3	GPS - OPUS
47 48 11.68296	96 17 18.94145	519187.912	211036.310	.131	3	GPS - RTRN
47 48 11.68458	96 17 18.94143	519187.913	211036.474	.131	3	GPS - RTRN
47 48 11.68244	96 17 18.94019	519187.998	211036.257	.013		ADJUSTMENT
47 48 11.68244	96 17 18.94019	519187.998	211036.257	.013	C	GPS - STATIC

<u>NAD83(1996)</u>		<u>Red Lake County</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 48 11.68193	96 17 18.94111	519187.935	211036.206	.033	C	GPS - STATIC



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1841326.762	819588.576	832568.496	17387333.995	.131	3	GPS - OPUS	2022	GPSBM
1841326.766	819588.551	832568.500	17387333.969	.131	3	GPS - OPUS	2022	GPSBM
1841326.762	819588.674	832568.496	17387334.092	.131	3	GPS - RTRN	2021	RTRN2021
1841326.770	819588.838	832568.504	17387334.256	.131	3	GPS - RTRN	2019	RTRN2019
1841326.846	819588.618	832568.580	17387334.036	.013		ADJUSTMENT	2013	GPS2946
1841326.846	819588.618	832568.580	17387334.036	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1841326.781	819588.568	832568.515	17387333.987	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PURATH_14-DN8408-3S-20OCT2021.jpg	S	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PURATH_14-DN8408-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/PURATH_14-DN8408-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: RADIS

NGS Name: RADIS

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO6419](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	150 N	42 W	474906.52	960040.71	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2012	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010)

Stamping: RADIS 2010

0.5 MILE WEST OF BROOKS, 0.55 MILE WEST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS, AT TRUNK HIGHWAY 92 MILEPOINT 12.45, 38.9 FEET SOUTH OF TRUNK HIGHWAY 92, 13.8 FEET EAST OF A CEMETERY ENTRANCE, 15.2 FEET NORTH OF A GRANITE BLOCK PILLAR, 6.5 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1125.031	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1125.162	.016	2/1				VERTICAL CONTROL SURVEY	2013 VMAHN
1125.162	.016	2/1				VERTICAL CONTROL SURVEY	2012 VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1125.172			1036.218	.008	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1125.172			1036.218	.008	2011	GPS - STATIC	2013 HTERR
1125.162	.131		1036.415	.066	1996	GPS - STATIC	2012 HTERR
1125.073	.262		1036.297	.197	2007	GPS - RTRN	2012 RTRN2012

Geoid Separations(ft): GEOID18 = -88.934 12B = -88.878 09 = -88.776 03 = -88.747

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 06.51895	96 00 40.71234	587311.332	216784.036	.010		ADJUSTMENT	2013	GPS2946
47 49 06.51895	96 00 40.71234	587311.332	216784.036	.010	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 06.51908	96 00 40.71361	587311.245	216784.048	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 06.51841	96 00 40.71324	587311.271	216783.980	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1909622.845	822452.820	900894.256	17390110.745	.010		ADJUSTMENT	2013	GPS2946
1909622.845	822452.820	900894.256	17390110.745	.010	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1909622.759	822452.836	900894.170	17390110.761	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1909622.781	822452.768	900894.192	17390110.692	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/RADIS-DO6419-3S-21JUL2010.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/RADIS-DO6419-2-21JUL2010.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/RADIS-DO6419-1-21JUL2010.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Jul 21, 2010
	Jul 21, 2010
	Jul 21, 2010



Mn/DOT Name: REBO

NGS Name: REBO

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8406](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	14	150 N	44 W	474831.80	961600.16	2	C	2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) Stamping: REBO 2010

3.3 MILES NORTH OF MARCOUX CORNERS, 3.3 MILES NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF COUNTY ROAD 49 AND TRUNK HIGHWAY 32 IN MARCOUX CORNERS, AT TRUNK HIGHWAY 32 MILEPOINT 80.5, 40.5 FEET EAST OF TRUNK HIGHWAY 32, 14.2 FEET SOUTH OF AN ENTRANCE, 70.1 FEET SOUTHWEST OF A POWER POLE, 8.3 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1063.108	.016	2/1				VERTICAL ADJUSTMENT	2025 00000988
1062.872	.016	2/1				VERTICAL CONTROL SURVEY	2023 VRDLK
1062.987	.016	2/1				VERTICAL ADJUSTMENT	2019 00000941
1063.108	.016	2/1				VERTICAL CONTROL SURVEY	2011 VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1062.987	.262		974.230	.197	2011	GPS - RTRN	2019 RTRN2019
1063.108			974.339	.014	2011	HORIZONTAL ADJUSTMENT	2013 GPS2946
1063.108			974.339	.014	2011	GPS - STATIC	2013 HTERR
1063.121	.131		974.486	.066	1996	GPS - STATIC	2012 HTERR

Geoid Separations(ft): GEOID18 = -88.756 12B = -88.684 09 = -88.628 03 = -88.622

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 48 31.79706	96 16 00.16210	524563.552	213080.725	.131	3	GPS - RTRN	2019	RTRN2019
47 48 31.79734	96 16 00.16579	524563.300	213080.754	.016		ADJUSTMENT	2013	GPS2946
47 48 31.79734	96 16 00.16579	524563.300	213080.754	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 48 31.79687	96 16 00.16670	524563.238	213080.706	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1846783.228	821403.908	838029.694	17389143.049	.131	3	GPS - RTRN	2019	RTRN2019
1846782.977	821403.947	838029.444	17389143.088	.016		ADJUSTMENT	2013	GPS2946
1846782.977	821403.947	838029.444	17389143.088	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1846782.913	821403.902	838029.380	17389143.043	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REBO-DN8406-3E-02OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REBO-DN8406-2-02OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REBO-DN8406-1-02OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
E	Oct 2, 2019
	Oct 2, 2019
	Oct 2, 2019



Mn/DOT Name: RED LAKE

NGS Name: RED LAKE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1430](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/1022
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	151 N	44 W	475208.01	961625.93		2	1964	2008	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1994)

Stamping: RED LAKE 1964

AT THE SOUTH EDGE OF RED LAKE FALLS, 1.1 MILES SOUTH AND SOUTHEAST ALONG TRUNK HIGHWAY 32 SOUTH (MAIN STREET) FROM THE JUNCTION OF TRUNK HIGHWAY 32 SOUTH (MAIN STREET) AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.3 MILE WEST ALONG 15TH STREET SOUTHEAST, 30.0 FEET SOUTHWEST OF MAIN AVENUE SOUTH, 0.9 MILE SOUTH OF THE POST OFFICE, 42.0 FEET SOUTHWEST OF A GRAVEL ROAD, 40.0 FEET NORTH OF A GRAVEL ROAD, 37.0 FEET EAST OF A GRAVEL ROAD, 112.29 FEET NORTHEAST OF RED LAKE RM 1, 210.61 FEET SOUTHEAST OF RED LAKE RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1040.385	.197			951.757	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1039.204							RECIPROCAL VERTICAL ANGLE	1964	HORZ

Geoid Separations(ft): GEOID18 = -89.071 12B = -88.970 09 = -88.934 03 = -88.953

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>Red Lake County</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 08.01387	96 16 25.93486	522777.927	234988.550	.066	2	ADJUSTMENT	1999	17648
47 52 08.01178	96 16 25.93064	522778.215	234988.339	.066	2	ADJUSTMENT	1998	17655

<u>NAD83(1986)</u>				<u>Red Lake County</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 08.01128	96 16 25.92806	522778.390	234988.289	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 08.12834	96 16 24.75654			.100	2	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
		1845924.865	843364.609	837199.893	17411114.371	.066	2	ADJUSTMENT	1999 17648
		1845925.144	843364.385	837200.171	17411114.147	.066	2	ADJUSTMENT	1998 17655

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
		1845925.317	843364.328	837200.345	17411114.088	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
		1221314.499	515288.194			.100	2	CLASSICAL SURVEY	1964 13522



Mn/DOT Name: RED LAKE AZ MK

NGS Name: RED LAKE AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1432](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/1022
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	151 N	44 W	475223.68	961559.10		2	1964	2019	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	STEEL ROD ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1979)

Stamping: RED LAKE 1964

AT THE SOUTH EDGE OF RED LAKE FALLS, 0.8 MILE SOUTH AND SOUTHEAST ALONG TRUNK HIGHWAY 32 SOUTH (MAIN STREET) FROM THE JUNCTION OF TRUNK HIGHWAY 32 SOUTH (MAIN STREET) AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, 0.25 MILE SOUTHEAST ON TRUNK HIGHWAY 32 FROM A TRUNK HIGHWAY 32 BRIDGE OVER A RAILROAD, 56.0 FEET EAST OF TRUNK HIGHWAY 32, 4.0 FEET NORTH OF A TELEPHONE POLE, 1.5 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1040.352	.197		951.711	.131	1996	HORIZONTAL ADJUSTMENT	1999 17648

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1036.087						RECIPROCAL VERTICAL ANGLE	1977 HORZ

Geoid Separations(ft): GEOID18 = -89.088 12B = -88.983 09 = -88.943 03 = -88.970

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 23.68052	96 15 59.09890	524605.652	236578.402	.066	2	ADJUSTMENT	1999	17648
47 52 23.67838	96 15 59.09462	524605.944	236578.185	.066	2	ADJUSTMENT	1998	17655

<u>NAD83(1986)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 23.67790	96 15 59.09213	524606.114	236578.137	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 23.79466	96 15 57.92237			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1847817.867	844875.617	839095.734	17412623.496	.066	2	ADJUSTMENT	1999	17648
1847818.150	844875.389	839096.016	17412623.267	.066	2	ADJUSTMENT	1998	17655

<u>NAD83(1986)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1847818.317	844875.333	839096.184	17412623.211	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1223207.428	516799.176			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: RED LAKE FALLS MUNICIPAL TANK

NGS Name: RED LAKE FALLS MUNICIPAL TANK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1427](#) [Get Map](#)
NGS Quad / Sta Num : 47096141/1010
USGS Quad: RED LAKE FALLS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	151 N	44 W	475256.18	961633.63		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1979	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	ELEVATED TANK	NGS

Description: (1979)

Stamping:

IN RED LAKE FALLS, AT THE JUNCTION OF 2ND STREET SOUTHWEST AND CHAMPAGNE AVENUE SOUTHWEST.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.121 12B = -89.002 09 = -88.979 03 = -89.012

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 56.17508	96 16 33.63137	522247.423	239868.307	.328	4	ADJUSTMENT	1999	17648
47 52 56.17284	96 16 33.62687	522247.730	239868.080	.328	4	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 56.17251	96 16 33.62451	522247.891	239868.047	.328	4	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 52 56.27636	96 16 32.45184			.100	4	CLASSICAL SURVEY	1964	13522	

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1845601.037	848261.752	836882.497	17416014.068	.328	4	ADJUSTMENT	1999	17648
1845601.334	848261.512	836882.793	17416013.828	.328	4	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1845601.493	848261.472	836882.953	17416013.788	.328	4	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1220990.661	520183.986			.100	4	CLASSICAL SURVEY	1964	13522	



Mn/DOT Name: RED LAKE FALLS RADIO MAST

NGS Name: RED LAKE FALLS RADIO MAST

County: RED LAKE, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47096141/
USGS Quad: RED LAKE FALLS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	22	151 N	44 W	475319.28	961702.06		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1977)

Stamping:

AT THE NORTHWEST EDGE OF RED LAKE FALLS, 0.3 MILE NORTH ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.4 MILE WEST-NORTHWEST ALONG BOTTINEAU AVENUE NORTHWEST, THEN 0.2 MILE NORTH ALONG MILL STREET NORTHWEST, THEN 217.0 FEET WEST ALONG 7TH STREET NORTHWEST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.140 12B = -89.016 09 = -88.999 03 = -89.035



Mn/DOT Name: RED LAKE FALLS WEST WATER TANK

NGS Name: RED LAKE FALLS WEST WATER TANK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1428](#)

[Get Map](#)

NGS Quad / Sta Num : 47096141/

USGS Quad: RED LAKE FALLS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	22	151 N	44 W	475247.22	961703.44		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1979	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

ELEVATED TANK

Mon. Agency

MNDT

Description: (1979)

Stamping:

IN THE WEST PART OF RED LAKE FALLS, 0.1 MILE SOUTH ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 0.5 MILE WEST ALONG 4TH STREET SOUTHWEST, 0.4 MILE WEST OF TRUNK HIGHWAY 32, 100.0 FEET WEST OF ADAMS AVENUE SOUTHWEST, BETWEEN 5TH STREET SOUTHWEST AND 4TH STREET SOUTHWEST.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.114 12B = -88.999 09 = -88.976 03 = -89.006

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 52 47.22367	96 17 03.43857	520216.537	238958.947	.328	4	ADJUSTMENT	1999	17648
47 52 47.22154	96 17 03.43410	520216.841	238958.731	.328	4	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 52 47.22117	96 17 03.43169	520217.006	238958.694	.328	4	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 52 47.33698	96 17 02.25912			.100	4	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1843533.828	847439.116	834813.281	17415193.857	.328	4	ADJUSTMENT	1999	17648
1843534.123	847438.888	834813.576	17415193.628	.328	4	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1843534.286	847438.844	834813.739	17415193.584	.328	4	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1218923.438	519362.564			.100	4	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: RED LAKE RM 1

NGS Name: RED LAKE RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP3906](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	27	151 N	44 W	475207.19	961627.04	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2019	GOOD	Horz=NO Vert=NO	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2008) Stamping: RED LAKE NO 1 1964

AT THE SOUTH EDGE OF RED LAKE FALLS, 0.5 MILE SOUTH ALONG TRUNK HIGHWAY 32 FROM THE TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 11 FORK IN RED LAKE FALLS, 112.0 FEET NORTHEAST OF THE NORTHEAST CORNER OF THE WEST ONE OF TWO HOUSES, 31.0 FEET WEST OF A DRIVEWAY, 112.29 FEET SOUTHWEST OF STATION RED LAKE.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1039.975	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1040.093	.016	2/1					VERTICAL CONTROL SURVEY	2011	VTH32

Geoid Separations(ft): GEOID18 = -89.071 12B = -88.970 09 = -88.934 03 = -88.953

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/RED_LAKE_RM_1-CP3906-3S-08SEP2008.jpg	S	Sep 8, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/RED_LAKE_RM_1-CP3906-2-08SEP2008.jpg		Sep 8, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/RED_LAKE_RM_1-CP3906-1-08SEP2008.jpg		Sep 8, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: RED LAKE RM 2

NGS Name: RED LAKE RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP3907](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	151 N	44 W	475209.80	961627.53		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2019	NOT FOUND	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1984) **Stamping:** RED LAKE NO 2 1964

AT THE SOUTH EDGE OF RED LAKE FALLS, 0.5 MILE SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 11 FORK IN RED LAKE FALLS, 108.0 FEET SOUTHEAST OF THE SOUTHEAST RAIL OF THE RAILROAD TRACKS, 77.0 FEET WEST OF A GRAVEL ROAD, 210.61 FEET NORTHWEST OF STATION RED LAKE, 1.5 FEET EAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.075 12B = -88.973 09 = -88.934 03 = -88.957



Mn/DOT Name: REDPENN

NGS Name: REDPENN

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DO8550	Get Map
NW	28	152 N	42 W	475749.29	960315.77	2	C	NGS Quad / Sta Num : 47096111/ USGS Quad: PLUMMER	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2009	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2009)

Stamping: REDPENN 2009

4.0 MILES NORTH OF PLUMMER, 4.25 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 345.1, 71.70 FEET WEST OF TRUNK HIGHWAY 59, 34.80 FEET SOUTH OF 140TH STREET SOUTHEAST (RED LAKE/PENNINGTON COUNTY LINE), 3.4 FEET EAST OF A RIGHT-OF-WAY POST AND A WITNESS POST.

Station Pair: CHOLE - RED LAKE, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u> Orthometric Height			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1122.613	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1122.770	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u> Orthometric Height			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1122.613			1033.502	.022	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1122.613	.131		1033.650	.066	1996	GPS - STATIC	2023	HERSK
1122.613			1033.502	.022	2011	GPS - STATIC	2023	HERSK
1122.826	.262		1033.564	.197	2011	GPS - OPUS	2020	GPSBM
1122.767	.262		1033.607	.197	2011	GPS - RTRN	2020	RTRN2020
1122.770			1033.502	.029	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1122.770			1033.502	.029	2011	GPS - STATIC	2013	HTERR
1122.642	.262		1033.545	.197	2007	GPS - RTRN	2012	RTRN2012
1122.767	.131		1033.650	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.262 12B = -89.160 09 = -89.101 03 = -89.114

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u> Geodetic Position		Red Lake County					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 49.29458	96 03 15.77270	576514.492	269713.164	.013		ADJUSTMENT	2023	GPS3597
47 57 49.29458	96 03 15.77270	576514.492	269713.164	.013	C	GPS - STATIC	2023	HERSK
47 57 49.29401	96 03 15.77340	576514.444	269713.106	.131	3	GPS - OPUS	2020	GPSBM
47 57 49.29464	96 03 15.77221	576514.525	269713.170	.131	3	GPS - RTRN	2020	RTRN2020
47 57 49.29458	96 03 15.77270	576514.492	269713.164	.016		ADJUSTMENT	2013	GPS2946
47 57 49.29458	96 03 15.77270	576514.492	269713.164	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u> Geodetic Position		Red Lake County					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 49.29423	96 03 15.77516	576514.324	269713.128	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u> Geodetic Position		Red Lake County					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 49.29426	96 03 15.77409	576514.397	269713.131	.033	C	GPS - STATIC	2023	HERSK
47 57 49.29426	96 03 15.77409	576514.397	269713.131	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901072.953	875783.547	892413.316	17443470.421	.013		ADJUSTMENT	2023	GPS3597
1901072.953	875783.547	892413.316	17443470.421	.013	C	GPS - STATIC	2023	HERSK
1901072.903	875783.492	892413.266	17443470.365	.131	3	GPS - OPUS	2020	GPSBM
1901072.987	875783.552	892413.349	17443470.426	.131	3	GPS - RTRN	2020	RTRN2020
1901072.953	875783.547	892413.316	17443470.421	.016		ADJUSTMENT	2013	GPS2946
1901072.953	875783.547	892413.316	17443470.421	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901072.784	875783.518	892413.147	17443470.393	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1901072.857	875783.519	892413.220	17443470.393	.033	C	GPS - STATIC	2023	HERSK
1901072.857	875783.519	892413.220	17443470.393	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REDPENN-DO8550-3W-04OCT2018.jpg	W	Oct 4, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REDPENN-DO8550-2-04OCT2018.jpg		Oct 4, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REDPENN-DO8550-1-04OCT2018.jpg		Oct 4, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: REPOLK MNDT

NGS Name: REPOLK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DF7309](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	150 N	42 W	474537.86	960002.13		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2005	DESTROYED	Horz=NO Vert=NO	NO		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (2002)

Stamping: REPOLK 2002

4.0 MILES SOUTH OF BROOKS, 4.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 330.6, 75.0 FEET EAST OF TRUNK HIGHWAY 59, 19.0 FEET NORTH OF AN ENTRANCE, 0.9 FOOT WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
			1067.924	.010	2011	HORIZONTAL ADJUSTMENT			2012	GPS2800
			1068.042	.011	2007	HORIZONTAL ADJUSTMENT			2007	GPS2300
1156.559	.131		1068.042	.066	1996	HORIZONTAL ADJUSTMENT			2003	GPS1894
1156.559	.131		1068.042	.066	1996	GPS - STATIC			2003	HBAGL

Geoid Separations(ft): GEOID18 = -88.701 12B = -88.651 09 = -88.523 03 = -88.533

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 37.85933	96 00 02.13363	590044.452	195652.498	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 37.85927	96 00 02.13458	590044.387	195652.491	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 45 37.85896	96 00 02.13473	590044.377	195652.460	.033	C	ADJUSTMENT	2003	GPS1894
47 45 37.85896	96 00 02.13473	590044.377	195652.460	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911460.511	801227.585	902705.295	17368876.386	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911460.446	801227.582	902705.230	17368876.382	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911460.435	801227.551	902705.218	17368876.351	.033	C	ADJUSTMENT	2003	GPS1894
1911460.434	801227.551	902705.218	17368876.351	.033	C	GPS - STATIC	2003	HBAGL



Mn/DOT Name: REPOLK RESET

NGS Name: REPOLK RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DH7975](#)

[Get Map](#)

NGS Quad / Sta Num : 47096112/

USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	150 N	42 W	474537.86	960002.13	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2005	2018	DESTROYED	Horz=NO Vert=NO	YES		RECESSED 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (2005)

Stamping: REPOLK 2002 2005 RESET

4.0 MILES SOUTH OF BROOKS, 4.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 330.6, 75.0 FEET EAST OF TRUNK HIGHWAY 59, 19.0 FEET NORTH OF AN ENTRANCE, 0.9 FOOT WEST OF A WITNESS POST.

Station Notes

THE SURVEY MARK WAS FOUND WITH THE CAP OFF ON THE ROD.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1156.435	.016	2/1							VERTICAL ADJUSTMENT		2019	00000941
1156.563	.016	2/1							VERTICAL CONTROL SURVEY		2013	VMAHN
1156.563	.016	2/1							VERTICAL ADJUSTMENT		2006	00000425-9
1156.563	.016	2/1							VERTICAL CONTROL SURVEY		2005	VLAMB

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1156.563						1067.823	.010	2011	HORIZONTAL ADJUSTMENT		2013	GPS2970
1156.563	.131					1067.987	.066	1996	GPS - STATIC		2013	HPLK1
1156.563						1067.823	.010	2011	GPS - STATIC		2013	HPLK1
1156.471	.262					1067.947	.197	2007	GPS - RTRN		2012	RTRN2012
1156.612	.262					1068.075	.197	1996	GPS - RTRN		2008	RTRN2008

Geoid Separations(ft): GEOID18 = -88.701 12B = -88.651 09 = -88.523 03 = -88.533

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>									
Geodetic Position		Red Lake County					Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 45 37.85965	96 00 02.13353	590044.458	195652.530	.013		ADJUSTMENT	2013	GPS2970	
47 45 37.85965	96 00 02.13353	590044.458	195652.530	.013	C	GPS - STATIC	2013	HPLK1	
<u>NAD83(2007)</u>									
Geodetic Position		Red Lake County					Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 45 37.86020	96 00 02.13512	590044.350	195652.585	.131	3	GPS - RTRN	2012	RTRN2012	
<u>NAD83(1996)</u>									
Geodetic Position		Red Lake County					Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 45 37.85930	96 00 02.13460	590044.386	195652.495	.033	C	GPS - STATIC	2013	HPLK1	
47 45 37.85965	96 00 02.13403	590044.424	195652.530	.131	3	GPS - RTRN	2008	RTRN2008	

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911460.519	801227.617	902705.303	17368876.418	.013		ADJUSTMENT	2013	GPS2970
1911460.519	801227.617	902705.303	17368876.418	.013	C	GPS - STATIC	2013	HPLK1

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911460.413	801227.677	902705.197	17368876.478	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1911460.445	801227.585	902705.228	17368876.385	.033	C	GPS - STATIC	2013	HPLK1
1911460.485	801227.619	902705.269	17368876.419	.131	3	GPS - RTRN	2008	RTRN2008

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REPOLK_RESET-DH7975-3E-20AUG2008.jpg	E	Aug 20, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REPOLK_RESET-DH7975-2-20AUG2008.jpg		Aug 20, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REPOLK_RESET-DH7975-1-20AUG2008.jpg		Aug 20, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: REPOLK RESET 2

NGS Name: REPOLK RESET 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8859](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	35	150 N	42 W	474537.86	960002.13		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: **Stamping:** REPOLK 2 2005 2018

4.0 MILES SOUTH OF BROOKS, 4.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND TRUNK HIGHWAY 92 IN BROOKS, AT TRUNK HIGHWAY 59 MILEPOINT 330.6, 74.7 FEET EAST OF TRUNK HIGHWAY 59, 18.4 FEET NORTH OF AN ENTRANCE, 12.3 FEET NORTH OF COUNTY ROAD 49 EXTENDED, 0.9 FOOT WEST OF A WITNESS POST.

Station Pair: BADGER - POLK, MN

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1156.280			1067.711	.027	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1156.287	.131		1067.852	.066	1996	GPS - STATIC	2023	HERSK
1156.280			1067.711	.027	2011	GPS - STATIC	2023	HERSK
1156.366	.262		1067.711	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -88.704 12B = -88.651 09 = -88.523 03 = -88.533

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 37.85939	96 00 02.13359	590044.454	195652.504	.013		ADJUSTMENT	2023	GPS3597
47 45 37.85939	96 00 02.13359	590044.454	195652.504	.013	C	GPS - STATIC	2023	HERSK
47 45 37.85954	96 00 02.13330	590044.474	195652.519	.131	3	GPS - RTRN	2018	RTRN2018

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 45 37.85915	96 00 02.13432	590044.405	195652.479	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911460.514	801227.591	902705.298	17368876.391	.013		ADJUSTMENT	2023	GPS3597
1911460.514	801227.591	902705.298	17368876.391	.013	C	GPS - STATIC	2023	HERSK
1911460.534	801227.606	902705.318	17368876.406	.131	3	GPS - RTRN	2018	RTRN2018

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1911460.463	801227.569	902705.247	17368876.369	.033	C	GPS - STATIC	2023	HERSK

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REPOLK_RESET_2-DR8859-3E-08OCT2018.jpg	E	Oct 8, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REPOLK_RESET_2-DR8859-2-08OCT2018.jpg		Oct 8, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REPOLK_RESET_2-DR8859-1-08OCT2018.jpg		Oct 8, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: REVI

NGS Name: REVI

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8392](#) [Get Map](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	36	152 N	44 W	475624.03	961326.22	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) **Stamping:** REVI 2010

5.0 MILES SOUTH OF ST. HILAIRE, 1.65 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF PENNINGTON AND RED LAKE COUNTY LINE AND TRUNK HIGHWAY 32, 3.5 MILES SOUTH OF ST. HILAIRE, AT TRUNK HIGHWAY 32 MILEPOINT 91.4, 94.3 FEET WEST OF TRUNK HIGHWAY 32, IN THE CENTER OF AN OLD RAILROAD GRADE, 73.2 FEET WEST-SOUTHWEST OF THE SOUTHERNMOST DELINEATOR POST, 2.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1074.420	.016	2/1					VERTICAL ADJUSTMENT	2025	00000988
1074.286	.016	2/1					VERTICAL CONTROL SURVEY	2023	VRDLK
1074.286	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1074.420	.016	2/1					VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1074.210	.262			985.018	.197	2011	GPS - RTRN	2019	RTRN2019
1074.420				985.247	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1074.420				985.247	.011	2011	GPS - STATIC	2013	HTERR
1074.407	.131			985.323	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.193 12B = -89.052 09 = -89.045 03 = -89.098

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 56 24.02516	96 13 26.22173	534983.588	260950.042	.131	3	GPS - RTRN	2019	RTRN2019
47 56 24.02778	96 13 26.22115	534983.627	260950.308	.013		ADJUSTMENT	2013	GPS2946
47 56 24.02778	96 13 26.22115	534983.627	260950.308	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 56 24.02769	96 13 26.22205	534983.566	260950.299	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1859214.622	868783.790	850529.813	17436526.145	.131	3	GPS - RTRN	2019	RTRN2019
1859214.673	868784.054	850529.863	17436526.409	.013		ADJUSTMENT	2013	GPS2946
1859214.673	868784.054	850529.863	17436526.409	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1859214.611	868784.047	850529.802	17436526.402	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REVI-DN8392-3W-09OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REVI-DN8392-2-09OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/REVI-DN8392-1-09OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 9, 2019
	Oct 9, 2019
	Oct 9, 2019



Mn/DOT Name: ROCK 14

NGS Name: ROCK 14

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8560](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	15	150 N	43 W	474811.49	960932.74		C	2008	2008	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: ROCK 14 2008

7.2 MILES SOUTHEAST OF RED LAKE FALLS, 5.3 MILES SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, THEN 5.0 MILES EAST ON COUNTY ROAD 14 (250TH STREET SOUTHEAST), 68.0 FEET NORTHEAST OF THE NORTH END OF A CORRUGATED PIPE, 51.5 FEET NORTH OF COUNTY ROAD 14, 16.8 FEET NORTH OF THE EAST END OF A CORRUGATED METAL PIPE, 2.0 FEET NORTH OF A SOUTH WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1098.771				1010.123	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1098.771				1010.123	.018	2011	GPS - STATIC	2013	HTERR
1098.751	.131			1010.277	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -88.632 12B = -88.563 09 = -88.478 03 = -88.487

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 48 11.49348	96 09 32.73693	551015.768	211075.922	.016		ADJUSTMENT	2013	GPS2946	
47 48 11.49348	96 09 32.73693	551015.768	211075.922	.016	C	GPS - STATIC	2013	HTERR	

<u>NAD83(1996)</u>				<u>Red Lake County</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 48 11.49305	96 09 32.73794	551015.699	211075.878	.033	C	GPS - STATIC	2012	HTERR	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
1873123.525	818283.780	864376.683	17385987.546	.016		ADJUSTMENT	2013	GPS2946	
1873123.525	818283.780	864376.683	17385987.546	.016	C	GPS - STATIC	2013	HTERR	

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
1873123.454	818283.739	864376.613	17385987.505	.033	C	GPS - STATIC	2012	HTERR	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ROCK_14-DO8560-3N-16OCT2008.jpg	N	Oct 16, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ROCK_14-DO8560-2-16OCT2008.jpg		Oct 16, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ROCK_14-DO8560-1-16OCT2008.jpg		Oct 16, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ROOKS MNDT

NGS Name: ROOKS

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DF7313](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	7	150 N	41 W	474914.44	955643.09	2	C	2002	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (2011)

Stamping: ROOKS 2002

2.5 MILES EAST OF BROOKS, 2.55 MILES EAST ALONG TRUNK HIGHWAY 92 FROM THE JUNCTION OF TRUNK HIGHWAY 92 AND TRUNK HIGHWAY 59 IN BROOKS TO TRUNK HIGHWAY 92 MILEPOINT 15.50, 0.05 MILE NORTH ON 250TH AVENUE SOUTHEAST, 30.7 FEET WEST OF 250TH AVENUE SOUTHEAST, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1137.284	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1137.396	.016	2/1				VERTICAL CONTROL SURVEY	2012	VTERR

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1137.501	.262		1048.394	.197	2011	GPS - OPUS	2022	GPSBM
1137.347	.262		1048.236	.197	2011	GPS - RTRN	2021	RTRN2021
1137.442			1048.312	.007	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1137.442			1048.295	.007	2011	GPS - STATIC	2013	HTERR
1137.399	.131		1048.485	.066	1996	GPS - STATIC	2012	HTERR
			1048.312	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1137.268	.262		1048.357	.197	1996	GPS - RTRN	2008	RTRN2008
			1048.436	.008	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1137.334	.131		1048.440	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1894
1137.334	.131		1048.440	.066	1996	GPS - STATIC	2003	HBAGL

Geoid Separations(ft): GEOID18 = -89.107 12B = -89.068 09 = -88.947 03 = -88.911

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 14.44285	95 56 43.08511	603524.856	217668.468	.131	3	GPS - OPUS	2022	GPSBM
47 49 14.44336	95 56 43.08416	603524.920	217668.520	.131	3	GPS - RTRN	2021	RTRN2021
47 49 14.44275	95 56 43.08471	603524.883	217668.458	.007		ADJUSTMENT	2013	GPS2946
47 49 14.44295	95 56 43.08388	603524.939	217668.479	.007	C	GPS - STATIC	2013	HTERR
47 49 14.44275	95 56 43.08471	603524.883	217668.458	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 14.44269	95 56 43.08567	603524.817	217668.452	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 49 14.44254	95 56 43.08443	603524.902	217668.437	.033	C	GPS - STATIC	2012	HTERR
47 49 14.44302	95 56 43.08434	603524.908	217668.486	.131	3	GPS - RTRN	2008	RTRN2008
47 49 14.44240	95 56 43.08584	603524.806	217668.422	.033	C	ADJUSTMENT	2003	GPS1894
47 49 14.44240	95 56 43.08584	603524.806	217668.422	.033	C	GPS - STATIC	2003	HBAGL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1925857.037	822651.449	917133.692	17390288.327	.131	3	GPS - OPUS	2022	GPSBM
1925857.104	822651.498	917133.759	17390288.376	.131	3	GPS - RTRN	2021	RTRN2021
1925857.064	822651.438	917133.719	17390288.315	.007		ADJUSTMENT	2013	GPS2946
1925857.122	822651.456	917133.776	17390288.334	.007	C	GPS - STATIC	2013	HTERR
1925857.064	822651.438	917133.719	17390288.315	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1925856.999	822651.434	917133.653	17390288.312	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1925857.083	822651.416	917133.737	17390288.294	.033	C	GPS - STATIC	2012	HTERR
1925857.091	822651.464	917133.745	17390288.342	.131	3	GPS - RTRN	2008	RTRN2008
1925856.986	822651.405	917133.640	17390288.283	.033	C	ADJUSTMENT	2003	GPS1894
1925856.986	822651.405	917133.640	17390288.283	.033	C	GPS - STATIC	2003	HBAGL

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ROOKS-DF7313-3W-20OCT2021.jpg	W	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ROOKS-DF7313-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ROOKS-DF7313-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SHAKA

NGS Name: SHAKA

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DQ8553](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	9	151 N	42 W	475512.35	960210.69	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2012) Stamping: SHAKA 2010

0.5 MILE NORTH OF PLUMMER, 1.05 MILES NORTH ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 AT THE SOUTH EDGE OF PLUMMER TO TRUNK HIGHWAY 59 MILEPOINT 341.95, THEN 0.25 MILE EAST ON 170TH STREET SOUTHEAST, 20.3 FEET SOUTH OF 170TH STREET SOUTHEAST, 8.8 FEET WEST OF A FIELD ENTRANCE, 106.4 FEET SOUTH-SOUTHWEST OF A POWER POLE WITH A GUY WIRE, 8.1 FEET NORTHEAST OF A WITNESS POST.

Station Pair: BUICK - RED LAKE, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1123.495	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1123.646	.016	2/1				VERTICAL CONTROL SURVEY	2013	VSTAD

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1123.495			1034.342	.015	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1123.495	.131		1034.493	.066	1996	GPS - STATIC	2023	HERSK
1123.495			1034.342	.015	2011	GPS - STATIC	2023	HERSK
1123.646			1034.342	.018	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1123.646			1034.342	.018	2011	GPS - STATIC	2013	HTERR
1123.577	.262		1034.434	.197	2007	GPS - RTRN	2012	RTRN2012
1123.620	.131		1034.493	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.304 12B = -89.199 09 = -89.140 03 = -89.137

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 55 12.35231	96 02 10.69149	581011.845	253827.883	.010		ADJUSTMENT	2023	GPS3597
47 55 12.35231	96 02 10.69149	581011.845	253827.883	.010	C	GPS - STATIC	2023	HERSK
47 55 12.35231	96 02 10.69149	581011.845	253827.883	.016		ADJUSTMENT	2013	GPS2946
47 55 12.35231	96 02 10.69149	581011.845	253827.883	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(2007)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 55 12.35138	96 02 10.69297	581011.745	253827.788	.131	3	GPS - RTRN	2012	RTRN2012

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 55 12.35202	96 02 10.69250	581011.776	253827.853	.033	C	GPS - STATIC	2023	HERSK
47 55 12.35202	96 02 10.69250	581011.776	253827.853	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1904894.651	859724.639	896214.159	17427400.949	.010		ADJUSTMENT	2023	GPS3597
1904894.651	859724.639	896214.159	17427400.949	.010	C	GPS - STATIC	2023	HERSK
1904894.651	859724.639	896214.159	17427400.949	.016		ADJUSTMENT	2013	GPS2946
1904894.651	859724.639	896214.159	17427400.949	.016	C	GPS - STATIC	2013	HTERR

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1904894.547	859724.548	896214.054	17427400.859	.131	3	GPS - RTRN	2012	RTRN2012

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1904894.581	859724.612	896214.089	17427400.922	.033	C	GPS - STATIC	2023	HERSK
1904894.581	859724.612	896214.089	17427400.922	.033	C	GPS - STATIC	2012	HTERR

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SHAKA-DO8553-3S-09OCT2018.jpg	S	Oct 9, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SHAKA-DO8553-2-09OCT2018.jpg		Oct 9, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SHAKA-DO8553-1-09OCT2018.jpg		Oct 9, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SLETTVEDT

NGS Name: SLETTVEDT

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	28	151 N	40 W	475238.00	954719.00		

NGS ACRN: AH7175	Get Map
NGS Quad / Sta Num : 47095441/1009	
USGS Quad: ROLAND	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1941)

Stamping: SLETTVEDT 1941

4.0 MILES NORTHEAST OF OKLEE, 2.6 MILES NORTH ON COUNTY ROAD 5 FROM THE JUNCTION OF TRUNK HIGHWAY 222 SOUTH (COUNTY ROAD 5 NORTH) AND COUNTY ROAD 22 EAST IN OKLEE, THEN 2.25 MILES EAST ON COUNTY ROAD 135, 34.0 FEET SOUTH OF A GRAVEL ROAD, 1.9 FEET NORTHWEST OF A WITNESS POST.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.760 12B = -89.737 09 = -89.629 03 = -89.560



Mn/DOT Name: SLETTVEDT AZ MK

NGS Name: SLETTVEDT AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4055](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	21	151 N	40 W	475240.00	954742.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1962	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 8 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	CGS

Description: (1941) **Stamping:** SLETTVEDT 1941

3.8 MILES NORTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 2.9 MILES EAST ALONG COUNTY ROAD 135, 2.3 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND THE RAILROAD TRACKS IN OKLEE, THEN 3.0 MILES WEST ALONG COUNTY ROAD 135, 250.0 FEET NORTH OF COUNTY ROAD 135, 25.0 FEET EAST OF A DIRT ROAD.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -89.747 12B = -89.718 09 = -89.613 03 = -89.544



Mn/DOT Name: SLETTVEDT AZ MK RESET

NGS Name: SLETTVEDT AZ MK RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4056](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	20	151 N	40 W	475240.71	954745.20		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1962	2020	GOOD	Horz=NO Vert=NO	YES		RECESSED 1 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2019)

Stamping: SLETTVEDT RESET 1962

3.0 MILES NORTHEAST OF OKLEE, 2.6 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND TRUNK HIGHWAY 222 IN OKLEE, THEN 2.95 MILES EAST ALONG COUNTY ROAD 135, 236.0 FEET NORTH OF COUNTY ROAD 135, 104.0 FEET SOUTH OF THE EXTENDED LINE OF A FARM ENTRANCE, 30.0 FEET WEST OF A PRIVATE DRIVEWAY, 1.2 FEET EAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1154.873	.262		1065.129	.197	2011	GPS - OPUS	2020	GPSBM
1154.771	.262		1065.027	.197	2011	GPS - OPUS	2020	GPSBM
1154.620	.262		1064.903	.197	2011	GPS - RTRN	2020	RTRN2020
1154.814			1065.031	.031	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1154.814			1065.031	.031	2011	GPS - STATIC	2013	HTERR
1154.722	.131		1065.172	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.744 12B = -89.718 09 = -89.609 03 = -89.541

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 40.71436	95 47 45.20339	640078.720	238805.781	.131	3	GPS - OPUS	2020	GPSBM
47 52 40.71472	95 47 45.20350	640078.713	238805.818	.131	3	GPS - OPUS	2020	GPSBM
47 52 40.71528	95 47 45.20316	640078.736	238805.874	.131	3	GPS - RTRN	2020	RTRN2020
47 52 40.71503	95 47 45.20298	640078.748	238805.849	.020		ADJUSTMENT	2013	GPS2946
47 52 40.71503	95 47 45.20298	640078.748	238805.849	.020	C	GPS - STATIC	2013	HTERR

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 40.71465	95 47 45.20387	640078.688	238805.810	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1963266.161	842222.884	954578.419	17409815.675	.131	3	GPS - OPUS	2020	GPSBM
1963266.155	842222.921	954578.413	17409815.712	.131	3	GPS - OPUS	2020	GPSBM
1963266.180	842222.977	954578.438	17409815.768	.131	3	GPS - RTRN	2020	RTRN2020
1963266.191	842222.951	954578.449	17409815.742	.020		ADJUSTMENT	2013	GPS2946
1963266.191	842222.951	954578.449	17409815.742	.020	C	GPS - STATIC	2013	HTERR

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
1963266.129	842222.915	954578.387	17409815.706	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_AZ_MK_RESET-CP4056-3W-16JUN2020.jpg	W	Jun 16, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_AZ_MK_RESET-CP4056-2-16JUN2020.jpg		Jun 16, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_AZ_MK_RESET-CP4056-1-16JUN2020.jpg		Jun 16, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SLETTVEDT RESET

NGS Name: SLETTVEDT RESET

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1089](#) [Get Map](#)
NGS Quad / Sta Num : 47095441/1009
USGS Quad: ROLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	28	151 N	40 W	475238.04	954719.90		1	1974	2008	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	NGS

Description: (2008)

Stamping: SLETTVEDT 1941 1974

4.0 MILES NORTHEAST OF OKLEE, 2.6 MILES NORTH ON COUNTY ROAD 5 FROM THE JUNCTION OF TRUNK HIGHWAY 222 SOUTH (COUNTY ROAD 5 NORTH) AND COUNTY ROAD 22 EAST IN OKLEE, THEN 2.25 MILES EAST ON COUNTY ROAD 135, 34.0 FEET SOUTH OF A GRAVEL ROAD, 65.4 FEET NORTHWEST OF SLETTVEDT RM 3, 30.7 FEET NORTHEAST OF SLETTVEDT RM 4, 2.3 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Year</u>	<u>Reference</u>
1175.851	.131		1086.517	.066	1996	1999	17648

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Year</u>	<u>Reference</u>
1174.506						1941	HORZ

Geoid Separations(ft): GEOID18 = -89.760 12B = -89.737 09 = -89.629 03 = -89.557

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 38.03850	95 47 19.89637	641805.935	238547.451	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 38.03504	95 47 19.89223	641806.220	238547.102	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 38.18221	95 47 18.81692			.100	1	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1964980.685	841891.859	956292.899	17409482.290	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1964980.955	841891.498	956293.169	17409481.930	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1340367.354	513818.997			.100	1	CLASSICAL SURVEY	1964	13522

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RESET-SK1089-3S-09MAY2008.jpg	S	May 9, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RESET-SK1089-2-09MAY2008.jpg		May 9, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RESET-SK1089-1-09MAY2008.jpg		May 9, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SLETTVEDT RM 1

NGS Name: SLETTVEDT RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4057](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	28	151 N	40 W	475238.10	954718.71		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1959) **Stamping:** SLETTVEDT NO 1 1941

4.0 MILES NORTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 3.2 MILES EAST ALONG COUNTY ROAD 135, 2.3 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND THE RAILROAD TRACKS IN OKLEE, THEN 3.2 MILES WEST ALONG COUNTY ROAD 135, 40.0 FEET EAST OF THE EAST GATE POST, 29.0 FEET SOUTH OF COUNTY ROAD 135.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -89.760 12B = -89.737 09 = -89.629 03 = -89.560



Mn/DOT Name: SLETTVEDT RM 2

NGS Name: SLETTVEDT RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4058](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	28	151 N	40 W	475238.13	954721.38		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1974	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	CGS

Description: (1959)

Stamping: SLETTVEDT NO 2 1941

4.0 MILES NORTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 3.2 MILES EAST ALONG COUNTY ROAD 135, 2.3 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND THE RAILROAD TRACKS IN OKLEE, THEN 3.2 MILES WEST ALONG COUNTY ROAD 135, 29.0 FEET SOUTH OF COUNTY ROAD 135, 2.0 FEET SOUTH OF A WIRE FENCE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.760 12B = -89.737 09 = -89.629 03 = -89.560



Mn/DOT Name: SLETTVEDT RM 3

NGS Name: SLETTVEDT RM 3

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4059](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	28	151 N	40 W	475237.86	954718.97		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2008	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2008)

Stamping: SLETTVEDT 1941 NO 3 1974

4.0 MILES NORTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 3.2 MILES EAST ALONG COUNTY ROAD 135, 2.3 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND THE RAILROAD TRACKS IN OKLEE, THEN 3.2 MILES WEST ALONG COUNTY ROAD 135, 51.0 FEET SOUTH OF COUNTY ROAD 135, 24.0 FEET EAST OF THE WOODS ROAD, 1.5 FEET EAST OF A WITNESS POST.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -89.764 12B = -89.737 09 = -89.629 03 = -89.560

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RM_3-CP4059-3SE-09MAY2008.jpg	SE	May 9, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RM_3-CP4059-2-09MAY2008.jpg		May 9, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RM_3-CP4059-1-09MAY2008.jpg		May 9, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SLETTVEDT RM 4

NGS Name: SLETTVEDT RM 4

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4060](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	28	151 N	40 W	475237.90	954720.30		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2008	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2008)

Stamping: SLETTVEDT 1941 NO 4 1974

4.0 MILES NORTHEAST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 0.6 NORTH ALONG TRUNK HIGHWAY 222 NORTH, THEN 2.0 MILES NORTH ALONG COUNTY ROAD 5, THEN 3.2 MILES EAST ALONG COUNTY ROAD 135, 2.3 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND THE RAILROAD TRACKS IN OKLEE, THEN 3.2 MILES WEST ALONG COUNTY ROAD 135, 66.0 FEET WEST OF THE WOODS ROAD, 47.0 FEET SOUTH OF COUNTY ROAD 135, 1.7 FEET EAST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.760 12B = -89.734 09 = -89.626 03 = -89.557

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RM_4-CP4060-3W-09MAY2008.jpg	W	May 9, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RM_4-CP4060-2-09MAY2008.jpg		May 9, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/SLETTVEDT_RM_4-CP4060-1-09MAY2008.jpg		May 9, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ST WOODS

NGS Name: ST WOODS

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DO8541](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	151 N	42 W	475605.95	955802.42		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: ST WOODS 2008

3.2 MILES NORTHEAST OF PLUMMER, 3.1 MILES EAST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND TRUNK HIGHWAY 59 IN PLUMMER, THEN 2.0 MILES NORTH ON 240TH AVENUE SOUTHEAST, 66.5 FEET SOUTH OF COUNTY ROAD 126, 48.6 FEET WEST OF 240TH AVENUE SOUTHEAST, 32.3 FEET SOUTHWEST OF THE SOUTHWEST CURB OF A BOX CULVERT, 2.3 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1131.048	.262		1041.612	.197	2011	GPS - OPUS	2022	GPSBM
1131.034	.262		1041.599	.197	2011	GPS - OPUS	2022	GPSBM
1130.933	.262		1041.497	.197	2011	GPS - RTRN	2021	RTRN2021
1131.054			1041.619	.022	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1131.054			1041.619	.022	2011	GPS - STATIC	2013	HTERR
1131.034	.131		1041.766	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.432 12B = -89.350 09 = -89.278 03 = -89.258

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 05.95036	95 58 02.41867	597895.187	259339.014	.131	3	GPS - OPUS	2022	GPSBM
47 56 05.95064	95 58 02.41918	597895.152	259339.043	.131	3	GPS - OPUS	2022	GPSBM
47 56 05.95058	95 58 02.41846	597895.201	259339.037	.131	3	GPS - RTRN	2021	RTRN2021
47 56 05.95077	95 58 02.41815	597895.222	259339.056	.016		ADJUSTMENT	2013	GPS2946
47 56 05.95077	95 58 02.41815	597895.222	259339.056	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 56 05.95037	95 58 02.41932	597895.143	259339.015	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1921993.417	864516.910	913324.824	17432171.351	.131	3	GPS - OPUS	2022	GPSBM
1921993.384	864516.940	913324.790	17432171.380	.131	3	GPS - OPUS	2022	GPSBM
1921993.433	864516.932	913324.839	17432171.372	.131	3	GPS - RTRN	2021	RTRN2021
1921993.455	864516.950	913324.861	17432171.391	.016		ADJUSTMENT	2013	GPS2946
1921993.455	864516.950	913324.861	17432171.391	.016	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1921993.373	864516.913	913324.780	17432171.353	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ST_WOODS-DO8541-3S-21OCT2021.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ST_WOODS-DO8541-2-21OCT2021.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/ST_WOODS-DO8541-1-21OCT2021.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Oct 21, 2021
	Oct 21, 2021
	Oct 21, 2021



Mn/DOT Name: STA 10

NGS Name: STA 10

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	30	151 N	42 W	475234.15	960529.28		3

NGS ACRN: [SL1373](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, 3.3 MILES SOUTH-SOUTHWEST OF PLUMMER, 3.24 MILES SOUTH-SOUTHWEST OF PLUMMER ALONG COUNTY HIGHWAY 20, 0.4 MILE SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 4.5 MILES WEST AND SOUTH ALONG COUNTY ROAD 1, THEN 0.3 MILE EAST ALONG COUNTY HIGHWAY 20.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Year</u>	<u>Reference</u>
1108.265	.262		1019.585	.197	1996	1999	17648

Geoid Separations(ft): GEOID18 = -89.134 12B = -89.025 09 = -88.973 03 = -88.973

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.14927	96 05 29.27779	567541.933	237743.531	.131	3	ADJUSTMENT	1999	17648
47 52 34.14574	96 05 29.27429	567542.173	237743.174	.131	3	ADJUSTMENT	1998	17655

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.14569	96 05 29.27475	567542.141	237743.169	.131	3	ADJUSTMENT	1986	17289

<u>NAD27</u>								
Geodetic Position						Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 34.29352	96 05 28.16912			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1890759.169	844225.839	882052.937	17411915.969	.131	3	ADJUSTMENT	1999	17648
1890759.393	844225.473	882053.162	17411915.602	.131	3	ADJUSTMENT	1998	17655

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1890759.362	844225.469	882053.130	17411915.598	.131	3	ADJUSTMENT	1986	17289

<u>NAD27</u>								
MN State Plane - North Zone							Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1266145.548	516152.752			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STA 12

NGS Name: STA 12

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1386](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	35	151 N	43 W	475053.32	960741.58		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, 1.1 MILES NORTH -NORTHEAST OF TERREBONNE, 1.1 MILES NORTH OF TERREBONNE ALONG COUNTY HIGHWAY 12, 1.1 MILES NORTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND TRUNK HIGHWAY 92 EAST (COUNTY ROAD 12) 0.3 MILE EAST OF TERREBONNE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1080.050	.262		991.527	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -88.976 12B = -88.874 09 = -88.819 03 = -88.825

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 50 53.32391	96 07 41.58231	558553.697	227496.567	.131	3	ADJUSTMENT	1999	17648
47 50 53.32027	96 07 41.57902	558553.923	227496.199	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 50 53.32018	96 07 41.57929	558553.905	227496.190	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 50 53.46839	96 07 40.46717			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1881347.333	834369.104	872624.604	17402068.184	.131	3	ADJUSTMENT	1999	17648
1881347.543	834368.727	872624.813	17402067.806	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1881347.524	834368.718	872624.795	17402067.798	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1256733.919	506296.020			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STA 13

NGS Name: STA 13

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1387](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	2	150 N	43 W	475000.13	960806.91		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, IN TERREBONNE, 98.0 FEET WEST OF TERREBONNE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1086.612	.262		998.177	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -88.878 12B = -88.786 09 = -88.724 03 = -88.730

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 50 00.13475	96 08 06.90566	556842.504	222101.489	.131	3	ADJUSTMENT	1999	17648
47 50 00.13105	96 08 06.90237	556842.730	222101.115	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 50 00.13092	96 08 06.90259	556842.715	222101.101	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 50 00.27961	96 08 05.78928			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1879410.003	829051.863	870679.558	17396751.520	.131	3	ADJUSTMENT	1999	17648
1879410.213	829051.480	870679.767	17396751.136	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1879410.197	829051.467	870679.751	17396751.123	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1254796.644	500978.822			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STA 14

NGS Name: STA 14

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1380](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	23	150 N	43 W	474729.51	960700.59		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2010	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, 5.57 MILES WEST-SOUTHWEST OF BROOKS, 2.94 MILES SOUTH-SOUTHEAST OF TERREBONNE
ALONG COUNTY ROAD T179, 1.0 MILE EAST ALONG COUNTY ROAD 117 FROM THE JUNCTION OF COUNTY ROAD 117 AND
COUNTY ROAD 12, 0.3 MILE EAST OF TERREBONNE, THEN 1.8 MILES SOUTH ALONG COUNTY ROAD T179.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1114.171	.262		1026.018	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -88.566 12B = -88.497 09 = -88.402 03 = -88.422

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 47 29.51491	96 07 00.58576	561416.869	206852.870	.131	3	ADJUSTMENT	1999	17648
47 47 29.51103	96 07 00.58225	561417.110	206852.477	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 47 29.51096	96 07 00.58229	561417.107	206852.470	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Reference
47 47 29.65978	96 06 59.47104			.100	3	CLASSICAL SURVEY 1980 16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
1883335.528	813625.712	874586.513	17381314.578	.131	3	ADJUSTMENT	1999	17648
1883335.752	813625.310	874586.737	17381314.175	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
1883335.749	813625.303	874586.734	17381314.168	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		Determination Method			Project Info	
X	Y	X	Y	Acc	Order	Reference
1258722.257	485552.725			.100	3	CLASSICAL SURVEY 1980 16196



Mn/DOT Name: STA 18

NGS Name: STA 18

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1378](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	26	150 N	42 W	474722.04	960003.09		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2012	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, 1.7 MILES SOUTH-SOUTHEAST OF BROOKS, 1.72 MILES SOUTH OF BROOKS ALONG COUNTY HIGHWAY 16, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 2.0 MILES SOUTH ALONG TRUNK HIGHWAY 59 SOUTH, THEN 88.0 FEET WEST ALONG COUNTY ROAD 16.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>						<u>Project Info</u>	
<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Year</u>	<u>Reference</u>
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		
1131.231	.262		1042.780	.197	1996	HORIZONTAL ADJUSTMENT	1999 17648

Geoid Separations(ft): GEOID18 = -88.842 12B = -88.763 09 = -88.648 03 = -88.678

Lat/Lon and County Coordinates (Feet)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 22.03827	96 00 03.08794	589929.285	206208.790	.131	3	ADJUSTMENT	1999	17648
47 47 22.03483	96 00 03.08379	589929.570	206208.443	.131	3	ADJUSTMENT	1998	17655

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 47 22.03482	96 00 03.08375	589929.573	206208.442	.131	3	ADJUSTMENT	1986	17289

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 47 22.18112	96 00 01.98089			.100	3	CLASSICAL SURVEY	1980	16196	

State Plane and UTM Coordinates (Feet)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911791.382	811777.874	903049.703	17379429.596	.131	3	ADJUSTMENT	1999	17648
1911791.652	811777.515	903049.973	17379429.237	.131	3	ADJUSTMENT	1998	17655

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1911791.655	811777.514	903049.976	17379429.235	.131	3	ADJUSTMENT	1986	17289

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1287178.459	483704.784			.100	3	CLASSICAL SURVEY	1980	16196	



Mn/DOT Name: STA 7

NGS Name: STA 7

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1370](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	16	151 N	42 W	475419.81	960206.60		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2012	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description: (2012)

Stamping:

16.3 MILES EAST-SOUTHEAST OF THIEF RIVER FALLS, 0.93 MILE EAST ALONG TRUNK HIGHWAY 59 (3RD STREET), 8.55 MILES SOUTHEAST ALONG TRUNK HIGHWAY 59, 8.07 MILES SOUTH ALONG TRUNK HIGHWAY 59 (90TH STREET SOUTHEAST), 0.07 MILE WEST ALONG COUNTY ROAD 1.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1121.061	.262		1032.222	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.291 12B = -89.186 09 = -89.127 03 = -89.121

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 54 19.80545	96 02 06.59761	581313.543	248504.289	.131	3	ADJUSTMENT	1999	17648
47 54 19.80194	96 02 06.59372	581313.810	248503.934	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 54 19.80193	96 02 06.59431	581313.769	248503.933	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position					Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 54 19.94810	96 02 05.49801			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1904971.159	854393.780	896283.448	17422068.240	.131	3	ADJUSTMENT	1999	17648
1904971.411	854393.415	896283.699	17422067.874	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1904971.370	854393.415	896283.659	17422067.875	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone					Project Info			
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1280357.297	526320.569			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STA 8

NGS Name: STA 8

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1372](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	19	151 N	42 W	475418.58	960430.99		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, 1.6 MILES WEST-SOUTHWEST OF PLUMMER, 1.58 MILES WEST OF PLUMMER ALONG COUNTY HIGHWAY 1, 0.3 MILE SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 1.6 MILES WEST ALONG COUNTY ROAD 1, THEN 50.0 FEET SOUTH OF 190TH AVENUE SOUTHEAST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1113.515	.262		1024.739	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -89.226 12B = -89.117 09 = -89.065 03 = -89.068

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 18.57654	96 04 30.98675	571475.979	248340.116	.131	3	ADJUSTMENT	1999	17648
47 54 18.57310	96 04 30.98309	571476.229	248339.768	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 54 18.57306	96 04 30.98363	571476.193	248339.764	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 54 18.71991	96 04 29.88029			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1895136.786	854645.334	886446.110	17422333.202	.131	3	ADJUSTMENT	1999	17648
1895137.021	854644.976	886446.345	17422332.844	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1895136.985	854644.974	886446.308	17422332.841	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1270523.091	526572.151			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STA 9

NGS Name: STA 9

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1371](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	18	151 N	42 W	475327.22	960430.31		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

IN RED LAKE COUNTY, 1.98 MILES SOUTHWEST OF PLUMMER, 0.4 MILE SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 1.5 MILES WEST ALONG COUNTY ROAD 1, THEN 1.0 MILE SOUTH ALONG 190TH AVENUE SOUTHEAST, 7.0 FEET WEST OF 190TH AVENUE SOUTHEAST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1108.265	.262		1019.522	.197	1996	HORIZONTAL ADJUSTMENT	1999 17648

Geoid Separations(ft): GEOID18 = -89.196 12B = -89.091 09 = -89.035 03 = -89.035

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference	
47 53 27.21501	96 04 30.30793	571541.866	243135.621	.131	3	ADJUSTMENT	1999 17648	
47 53 27.21153	96 04 30.30433	571542.112	243135.269	.131	3	ADJUSTMENT	1998 17655	

NAD83(1986)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference	
47 53 27.21151	96 04 30.30483	571542.078	243135.267	.131	3	ADJUSTMENT	1986 17289	

NAD27

Geodetic Position					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Year Reference
47 53 27.35856	96 04 29.20181			.100	3	1980 16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year Reference	
1894982.756	849443.413	886285.001	17417129.695	.131	3	ADJUSTMENT	1999 17648	
1894982.988	849443.051	886285.232	17417129.333	.131	3	ADJUSTMENT	1998 17655	

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year Reference	
1894982.954	849443.051	886285.198	17417129.332	.131	3	ADJUSTMENT	1986 17289	

NAD27

MN State Plane - North Zone					Project Info	
X	Y	X	Y	Acc	Order	Year Reference
1270369.061	521370.261			.100	3	1980 16196



Mn/DOT Name: STATION 1

NGS Name: STATION 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1091](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	152 N	41 W	475718.40	955135.71		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

3.5 MILES NORTH-NORTHEAST OF GARNES, 1.0 MILE EAST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND COUNTY ROAD 127 IN GARNES, THEN 3.4 MILES NORTH ALONG COUNTY ROAD 5.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1150.916	.262		1061.694	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.675 12B = -89.636 09 = -89.534 03 = -89.481

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 18.40398	95 51 35.71090	624180.408	266835.346	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 57 18.40015	95 51 35.70590	624180.751	266834.960	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 57 18.53856	95 51 34.63477			.100	3	CLASSICAL SURVEY	1980	16196	

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1948568.247	870895.180	939915.757	17438514.868	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1948568.573	870894.780	939916.083	17438514.467	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1323954.008	542821.292			.100	3	CLASSICAL SURVEY	1980	16196	



Mn/DOT Name: STATION 19

NGS Name: STATION 19

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1099](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	19	150 N	41 W	474723.08	955642.35		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

5.4 MILES SOUTHWEST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 4.0 MILES WEST ALONG TRUNK HIGHWAY 92 WEST, THEN 2.1 MILES SOUTH ALONG COUNTY ROAD 132, THEN 22.0 FEET EAST ALONG COUNTY ROAD 132.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1147.964	.262		1059.306	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -89.045 12B = -88.960 09 = -88.829 03 = -88.874

Lat/Lon and County Coordinates (Feet)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 23.07669	95 56 42.34762	603636.738	206383.838	.131	3	ADJUSTMENT	1999	17648

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 47 23.07345	95 56 42.34312	603637.047	206383.511	.131	3	ADJUSTMENT	1986	17289

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 47 23.21731	95 56 41.24539			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1925492.118	811373.710	916754.104	17379007.745	.131	3	ADJUSTMENT	1999	17648

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1925492.413	811373.370	916754.399	17379007.405	.131	3	ADJUSTMENT	1986	17289

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1300879.277	483300.445			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STATION 2

NGS Name: STATION 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1090](#)
NGS Quad / Sta Num : 47095441/
USGS Quad: ROLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	11	151 N	41 W	475449.55	955134.38		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

1.1 MILES NORTHEAST OF GARNES, 1.0 MILE EAST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND COUNTY ROAD 127 IN GARNES, THEN 0.5 MILE NORTH ALONG COUNTY ROAD 5.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1149.604	.262		1060.385	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -89.665 12B = -89.623 09 = -89.531 03 = -89.465

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 49.54911	95 51 34.38015	624369.961	251751.988	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 49.54515	95 51 34.37538	624370.288	251751.589	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 49.68408	95 51 33.30947			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1948120.449	855819.340	939447.254	17423435.790	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1948120.759	855818.928	939447.563	17423435.377	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1323505.903	527745.537			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STATION 20

NGS Name: STATION 20

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1098](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	21	150 N	41 W	474724.01	955504.27		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

4.5 MILES SOUTHWEST OF OKLEE, 0.2 MILE WEST ALONG 2ND AVENUE FROM THE JUNCTION OF 2ND AVENUE AND MAIN STREET IN OKLEE, THEN 1.4 MILES SOUTH ALONG TRUNK HIGHWAY 222 SOUTH, THEN 1.5 MILES WEST ALONG TRUNK HIGHWAY 92 WEST, 2.0 MILES SOUTH ALONG COUNTY ROAD 132, THEN 1.3 MILES WEST ALONG COUNTY ROAD 132.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1154.525	.262		1065.812	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.107 12B = -89.039 09 = -88.917 03 = -88.930

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 47 24.00635	95 55 04.26546	610333.907	206515.753	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 47 24.00321	95 55 04.26081	610334.227	206515.437	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 47 24.14568	95 55 03.16506			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1932187.964	811222.587	923451.688	17378847.996	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1932188.270	811222.257	923451.993	17378847.666	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1307575.199	483149.214			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STATION 3

NGS Name: STATION 3

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1102](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	9	151 N	41 W	475423.06	955406.92		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

1.0 MILE WEST OF GARNES, 1.0 MILE WEST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND COUNTY ROAD 127 IN GARNES, THEN 38.0 FEET NORTH ALONG COUNTY ROAD 128.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1142.714	.262		1053.610	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -89.554 12B = -89.495 09 = -89.409 03 = -89.357

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 23.05972	95 54 06.92480	613994.160	249002.401	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 23.05584	95 54 06.92024	613994.473	249002.010	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 23.19727	95 54 05.84781			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1937639.180	853510.880	928960.087	17421140.892	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1937639.476	853510.476	928960.383	17421140.487	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1313024.763	525437.300			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: STATION 4

NGS Name: STATION 4

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1103](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	18	151 N	41 W	475422.68	955643.20		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	1963	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

3.0 MILES WEST OF GARNES, 3.0 MILES WEST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND COUNTY ROAD 127 IN GARNES, THEN 39.0 FEET SOUTH ALONG 250TH AVENUE SOUTHEAST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1138.449	.262		1049.443	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -89.462 12B = -89.383 09 = -89.308 03 = -89.271

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 22.68063	95 56 43.19503	603347.085	248902.955	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 22.67688	95 56 43.19066	603347.385	248902.576	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
47 54 22.82018	95 56 42.11069			.100	3	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1926998.863	853861.292	918317.242	17421505.782	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1926999.146	853860.902	918317.525	17421505.391	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
1302384.626	525787.867			.100	3	16196



Mn/DOT Name: STATION 5

NGS Name: STATION 5

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SK1104](#) [Get Map](#)
NGS Quad / Sta Num : 47095444/
USGS Quad: OKLEE NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	14	151 N	42 W	475420.06	955919.07		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2010	NOT FOUND	Horz=? Vert=?	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	UNMONUMENTED	USGS

Description:

Stamping:

2.5 MILES EAST-SOUTHEAST OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 0.4 MILE SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 SOUTH, THEN 2.0 MILES EAST ALONG COUNTY ROAD 1, THEN 46.0 FEET SOUTH ALONG 230TH AVENUE SOUTHEAST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1128.279	.262		1039.361	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -89.373 12B = -89.281 09 = -89.212 03 = -89.193

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 54 20.06045	95 59 19.06809	592728.106	248582.523	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 54 20.05682	95 59 19.06392	592728.392	248582.156	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position					Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 54 20.20174	95 59 17.97650			.100	3	CLASSICAL SURVEY	1980	16196

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1916377.277	853989.759	907692.648	17421648.651	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1916377.547	853989.380	907692.918	17421648.272	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone					Project Info			
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1291763.215	525916.462			.100	3	CLASSICAL SURVEY	1980	16196



Mn/DOT Name: TBM 02 1 L24405

NGS Name: TBM 02 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8766](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	23	150 N	42 W	474747.00	960001.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

IRON ROD

Disk Type

UNMONUMENTED

Mon. Agency

MNDT

Description:

Stamping:

1.3 MILES SOUTH-SOUTHEAST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE WEST ALONG TRUNK HIGHWAY 92 EAST, THEN 1.5 MILES SOUTH ALONG TRUNK HIGHWAY 59 SOUTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -88.874 12B = -88.796 09 = -88.687 03 = -88.707



Mn/DOT Name: TBM 03 1 L24405

NGS Name: TBM 03 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8756](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	29	152 N	42 W	475721.00	960316.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

3.1 MILES NORTH-NORTHWEST OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, 3.2 MILES NORTHWEST AND NORTH ALONG TRUNK HIGHWAY 59 NORTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.271 12B = -89.166 09 = -89.107 03 = -89.121



Mn/DOT Name: TBM 03 10 L24405

NGS Name: TBM 03 10

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8765](#) [Get Map](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	11	150 N	42 W	474910.00	955959.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

0.4 MILE NORTH-NORTHEAST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 51 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 51 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 325.0 FEET NORTH ALONG TRUNK HIGHWAY 59 NORTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -88.966 12B = -88.914 09 = -88.802 03 = -88.779



Mn/DOT Name: TBM 03 2 L24405

NGS Name: TBM 03 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8757](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	33	152 N	42 W	475630.00	960310.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

2.1 MILES NORTH-NORTHWEST OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTER AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 2.3 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 NORTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.281 12B = -89.173 09 = -89.117 03 = -89.127



Mn/DOT Name: TBM 03 3 L24405

NGS Name: TBM 03 3

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8758](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	151 N	42 W	475539.00	960252.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

1.1 MILES NORTH-NORTHWEST OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTER AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 1.2 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 NORTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.291 12B = -89.183 09 = -89.127 03 = -89.130



Mn/DOT Name: TBM 03 4 L24405

NGS Name: TBM 03 4

County: RED LAKE, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: AK8759 Get Map
NW	9	151 N	42 W	475505.00	960238.00			NGS Quad / Sta Num : 47096111/ USGS Quad: PLUMMER

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

0.5 MILE NORTH-NORTHWEST OF PLUMMER, 0.5 MILE NORTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 124 (CENTRAL AVENUE) IN PLUMMER.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.291 12B = -89.183 09 = -89.127 03 = -89.124



Mn/DOT Name: TBM 03 5 L24405

NGS Name: TBM 03 5

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8760](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	15	151 N	42 W	475355.00	960153.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

1.0 MILE SOUTH-SOUTHEAST OF PLUMMER, 0.4 MILE SOUTH ALONG COUNTY ROAD 126 (MINNESOTA STREET) FROM THE JUNCTION OF COUNTY ROAD 126 (MINNESOTA STREET) AND COUNTY ROAD 52 (CENTRAL AVENUE) IN PLUMMER, THEN 0.3 MILE EAST ALONG COUNTY ROAD 1, THEN 0.5 MILE SOUTH-SOUTHEAST ALONG COUNTY ROAD 119.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.285 12B = -89.183 09 = -89.124 03 = -89.111



Mn/DOT Name: TBM 03 6 L24405

NGS Name: TBM 03 6

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8761](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	22	151 N	42 W	475256.00	960120.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

2.2 MILES SOUTH-SOUTHEAST OF PLUMMER, 0.2 MILE EAST ALONG COUNTY ROAD 52 (CENTRAL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 52 (CENTRAL AVENUE) AND COUNTY ROAD 126 (MINNESOTA STREET) IN PLUMMER, THEN 2.1 MILES SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 SOUTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.258 12B = -89.157 09 = -89.098 03 = -89.078



Mn/DOT Name: TBM 03 7 L24405

NGS Name: TBM 03 7

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8762](#) [Get Map](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	27	151 N	42 W	475209.00	960055.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

3.8 MILES NORTH-NORTHWEST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 52 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 52 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 3.8 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 NORTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.219 12B = -89.124 09 = -89.062 03 = -89.035



Mn/DOT Name: TBM 03 8 L24405

NGS Name: TBM 03 8

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8763](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	151 N	42 W	475125.00	960035.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
MN DT

Description:

Stamping:

2.9 MILES NORTH-NORTHWEST OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 52 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 52 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 2.8 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 NORTH.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -89.166 12B = -89.078 09 = -89.009 03 = -88.983



Mn/DOT Name: TBM 03 9 L24405

NGS Name: TBM 03 9

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [AK8764](#)
NGS Quad / Sta Num : 47096112/
USGS Quad: BROOKS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	2	150 N	42 W	475006.00	960013.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

IRON ROD

Disk Type

UNMONUMENTED

Mon. Agency

MNDT

Description:

Stamping:

1.4 MILES NORTH OF BROOKS, 0.1 MILE NORTH ALONG COUNTY ROAD 52 (MAIN STREET) FROM THE JUNCTION OF COUNTY ROAD 52 (MAIN STREET) AND IOWA AVENUE IN BROOKS, THEN 0.1 MILE EAST ALONG TRUNK HIGHWAY 92 EAST, THEN 1.2 MILES NORTH-NORTHWEST ALONG TRUNK HIGHWAY 59 NORTH.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -89.042 12B = -88.986 09 = -88.884 03 = -88.858



Mn/DOT Name: TBM 1 VLAMB

NGS Name: TBM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DH7978](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	26	150 N	42 W	474630.30	955959.30	2		2005	2011	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE IMBED IN MON

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

SPIKE

Mon. Agency

MNDT

Description: (2005)

Stamping:

2.7 MILES SOUTH OF BROOKS, AT THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 7.

Station Notes

THE MARK IS A RAILROAD SPIKE IN A POWER POLE IN THE NORTHEAST QUADRANT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1145.086	.016	2/1				VERTICAL ADJUSTMENT	2006	00000425-9
1145.083	.016	2/1				VERTICAL CONTROL SURVEY	2005	VLAMB

Geoid Separations(ft): GEOID18 = -88.779 12B = -88.707 09 = -88.582 03 = -88.612

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 2 VLAMB

NGS Name: TBM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DH7979](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	150 N	42 W	474630.20	955857.40	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2005	2011	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE IMBED IN MON

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

SPIKE

Mon. Agency

MNDT

Description: (2005)

Stamping:

2.9 MILES SOUTH-SOUTHEAST OF BROOKS, 0.85 MILE EAST OF THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 7, ON THE SOUTHSIDE OF COUNTY ROAD 7.

Station Notes

A RAILROAD SPIKE IN A POWER POLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1153.882	.016	2/1				VERTICAL ADJUSTMENT	2006	00000425-9
1153.876	.016	2/1				VERTICAL CONTROL SURVEY	2005	VLAMB

Geoid Separations(ft): GEOID18 = -88.855 12B = -88.773 09 = -88.645 03 = -88.691

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 3 VLAMB

NGS Name: TBM 3

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DH7980](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	31	150 N	41 W	474630.50	955743.20	2		2005	2011	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE IMBED IN MON

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

SPIKE

Mon. Agency

MNDT

Description: (2005)

Stamping:

6.7 MILES SOUTHWEST OF OKLEE, 1.75 MILES EAST OF THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 7, ON THE SOUTHSIDE OF COUNTY ROAD 7.

Station Notes

A RAILROAD SPIKE IN A POWER POLE

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1165.867	.016	2/1				VERTICAL ADJUSTMENT	2006	00000425-9
1165.851	.016	2/1				VERTICAL CONTROL SURVEY	2005	VLAMB

Geoid Separations(ft): GEOID18 = -88.947 12B = -88.858 09 = -88.724 03 = -88.783

* No Horizontal Positions in the Database *



Mn/DOT Name: TED MNDT

NGS Name: TED

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1393](#)
NGS Quad / Sta Num : 47096114/
USGS Quad: PLUMMER NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	13	151 N	44 W	475405.70	961331.70		2	1977	2019	NOT FOUND	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>							
IRON ROD				PIPE CAP				MNDT							

Description: (1977)

Stamping: TED 1977

3.0 MILES NORTHEAST OF RED LAKE FALLS, 0.4 MILE NORTH ALONG MAIN STREET FROM THE JUNCTION OF MAIN STREET AND 2ND STREET SOUTHWEST IN RED LAKE FALLS, THEN 2.0 MILES EAST-NORTHEAST ALONG TRUNK HIGHWAY 32 NORTH (BRIDGE STREET NORTHEAST), AT TRUNK HIGHWAY 32 MILEPOINT 88.7, 2.35 MILES NORTHEAST ON TRUNK HIGHWAY 32 FROM A TRUNK HIGHWAY 32 BRIDGE OVER THE CLEARWATER RIVER, 18.2 FEET SOUTHEAST OF TRUNK HIGHWAY 32, 93.2 FEET WEST-SOUTHWEST OF A RIGHT-OF-WAY POST, 118.2 FEET SOUTHEAST OF A RIGHT-OF-WAY POST, 400.0 FEET NORTHEAST OF AN ENTRANCE TO TEDS AUTO SALES.

Station Notes

THE ROAD WAS REBUILT.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1058.725	.197		970.005	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1057.413						RECIPROCAL VERTICAL ANGLE	1977	HORZ

Geoid Separations(ft): GEOID18 = -89.157 12B = -89.025 09 = -89.006 03 = -89.045

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 05.70484	96 13 31.70174	534636.055	246932.666	.066	2	ADJUSTMENT	1999	17648
47 54 05.70201	96 13 31.69668	534636.401	246932.380	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 05.70195	96 13 31.69504	534636.512	246932.374	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 54 05.82010	96 13 30.53145			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1858275.328	854795.522	849570.965	17422533.452	.066	2	ADJUSTMENT	1999	17648
1858275.661	854795.222	849571.297	17422533.152	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1858275.773	854795.211	849571.408	17422533.141	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1233664.735	526719.218			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: TER MNDT

NGS Name: TER

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1384](#)
NGS Quad / Sta Num : 47096113/
USGS Quad: TERREBONNE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	11	150 N	43 W	474904.46	960817.27		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1977	2012	GOOD	Horz=YES Vert=YES	NO		RECESSED 4 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
IRON ROD (DEPTH 2 FT)	SEE DESCRIPTION	MNDT

Description: (2010)

Stamping: TER 1977

1.0 MILE SOUTH OF TERREBONNE, 1.0 MILE SOUTH ALONG COUNTY ROAD 12 FROM THE JUNCTION OF COUNTY ROAD 12 AND TRUNK HIGHWAY 92 IN TERREBONNE, 14.9 FEET EAST OF COUNTY ROAD 12, 67.0 FEET NORTH OF A GRAVEL ROAD, 60.68 FEET WEST OF A SURVEYOR REFERENCE POINT (SRP) IN A POWER POLE.

Station Notes

THE MARK IS A TEMPORARY TRAVERSE STATION. THE MARK IS A 3/4 INCH IRON PIN WITH A BRASS WASHER AND A NAIL.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1100.391	.197		1012.065	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1099.407						RECIPROCAL VERTICAL ANGLE	1977	HORZ

Geoid Separations(ft): GEOID18 = -88.756 12B = -88.678 09 = -88.602 03 = -88.605

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 04.46377	96 08 17.26505	556152.359	216458.081	.066	2	ADJUSTMENT	1999	17648
47 49 04.46170	96 08 17.26052	556152.669	216457.872	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 04.46141	96 08 17.25909	556152.767	216457.843	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 49 04.58800	96 08 16.11220			.100	2	CLASSICAL SURVEY	1978	16128

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1878482.181	823443.418	869744.062	17391142.191	.066	2	ADJUSTMENT	1999	17648
1878482.482	823443.196	869744.363	17391141.969	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1878482.578	823443.163	869744.459	17391141.935	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1253871.228	495368.201			.100	2	CLASSICAL SURVEY	1978	16128



Mn/DOT Name: TERREBONNE

NGS Name: TERREBONNE

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1382](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/1023
USGS Quad: TERREBONNE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	9	150 N	43 W	474903.36	960949.02		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	1977	GOOD	Horz=? Vert=YES	NO		RECESSED 18 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1977)

Stamping: TERREBONNE 1964

1.8 MILES SOUTHWEST OF TERREBONNE, 0.2 MILE WEST ALONG TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12) FROM THE JUNCTION OF TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12) IN TERREBONNE, THEN 1.0 MILE SOUTH ALONG COUNTY ROAD 12, 1.2 MILES WEST ALONG 240TH STREET SOUTHEAST, 0.15 MILE WEST ON TRUNK HIGHWAY 92 FROM THE SAINT ANTHONY CHURCH IN TERREBONNE, THEN SOUTH 1.0 MILE ON COUNTY ROAD 12, THEN 1.15 MILES WEST ON A GRAVEL ROAD, AT THE SOUTHWEST CORNER OF A CULTIVATED FIELD, 70.0 FEET NORTH OF A GRAVEL ROAD, 30.0 FEET NORTHEAST OF A TEE-FENCE CORNER, 27.0 FEET NORTH OF AN EAST-WEST FENCE, 14.7 FEET EAST OF A NORTH-SOUTH FENCE, 100.51 FEET WEST-NORTHWEST OF TERREBONNE RM 1, 27.3 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1089.565	.197		1001.241	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1088.285						RECIPROCAL VERTICAL ANGLE	1964	HORZ	

Geoid Separations(ft): GEOID18 = -88.756 12B = -88.671 09 = -88.605 03 = -88.615

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 03.36151	96 09 49.01826	549890.434	216328.902	.066	2	ADJUSTMENT	1999	17648
47 49 03.35949	96 09 49.01385	549890.735	216328.698	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 49 03.35916	96 09 49.01216	549890.851	216328.665	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 49 03.48398	96 09 47.86030			.100	2	CLASSICAL SURVEY	1964	13522

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1872221.245	823578.888	863480.924	17391285.860	.066	2	ADJUSTMENT	1999	17648
1872221.537	823578.671	863481.216	17391285.644	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1872221.651	823578.633	863481.330	17391285.605	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
1247610.441	495503.461			.100	2	CLASSICAL SURVEY	1964	13522



Mn/DOT Name: TERREBONNE AZ MK

NGS Name: TERREBONNE AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1385](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/1023
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	16	150 N	43 W	474902.23	961031.63		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2012	GOOD	Horz=YES Vert=NO	YES		PROJECTS 2 IN.	STEEL ROD ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1964) Stamping: TERREBONNE 1964

2.3 MILES SOUTHWEST OF TERREBONNE, 0.15 MILE WEST ON TRUNK HIGHWAY 92 FROM THE SAINT ANTHONY CHURCH IN TERREBONNE, THEN SOUTH 1.0 MILE ON COUNTY ROAD 12, THEN 1.75 MILES WEST ON A GRAVEL ROAD, 22.0 FEET EAST OF THE CENTER OF A FIELD APPROACH, 40.0 FEET SOUTH OF A GRAVEL ROAD, 1.0 FOOT NORTH OF AN EAST-WEST FENCE, 3.2 FEET WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1090.296				1001.537	.018	2011		HORIZONTAL ADJUSTMENT	2013	GPS2946
1090.296				1001.537	.018	2011		GPS - STATIC	2013	HTERR
1090.319	.131			1001.694	.066	1996		GPS - STATIC	2012	HTERR
1090.549	.262			1002.226	.197	1996		HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -88.756 12B = -88.671 09 = -88.612 03 = -88.619

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 49 02.23348	96 10 31.63088	546982.357	216207.177	.016		ADJUSTMENT	2013	GPS2946	
47 49 02.23348	96 10 31.63088	546982.357	216207.177	.016	C	GPS - STATIC	2013	HTERR	

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 49 02.23303	96 10 31.63186	546982.290	216207.132	.033	C	GPS - STATIC	2012	HTERR	
47 49 02.23267	96 10 31.63132	546982.327	216207.095	.131	3	ADJUSTMENT	1999	17648	
47 49 02.23071	96 10 31.62691	546982.629	216206.897	.131	3	ADJUSTMENT	1998	17655	

<u>NAD83(1986)</u>		<u>Red Lake County</u>					<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 49 02.23034	96 10 31.62516	546982.748	216206.860	.131	3	ADJUSTMENT	1986	17289	

<u>NAD27</u>							<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 49 02.35443	96 10 30.47183			.100	3	CLASSICAL SURVEY	1978	16128	



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1869311.020	823580.131	860569.571	17391290.892	.016		ADJUSTMENT	2013	GPS2946
1869311.020	823580.131	860569.571	17391290.892	.016	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1869310.951	823580.088	860569.502	17391290.850	.033	C	GPS - STATIC	2012	HTERR
1869310.987	823580.050	860569.538	17391290.812	.131	3	ADJUSTMENT	1999	17648
1869311.279	823579.840	860569.830	17391290.601	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1869311.398	823579.798	860569.948	17391290.558	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1244700.195	495504.539			.100	3	CLASSICAL SURVEY	1978	16128

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TERREBONNE_AZ_MK-SL1385-3S-18MAY2010.jpg	S	May 18, 2010
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TERREBONNE_AZ_MK-SL1385-2-18MAY2010.jpg		May 18, 2010
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TERREBONNE_AZ_MK-SL1385-1-18MAY2010.jpg		May 18, 2010

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TERREBONNE RM 1

NGS Name: TERREBONNE RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4982](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/1023
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	9	150 N	43 W	474903.10	960947.60			1964	2010	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 2 IN.	STEEL ROD ADJ TO MON	NGS
Monument Type CONCRETE MONUMENT (CAST-IN-PLACE)																
Disk Type REFERENCE MARK DISK																
Description: (1964) Stamping: TERREBONNE NO 1 1964																

1.8 MILES SOUTHWEST OF TERREBONNE, 0.15 MILE WEST ON TRUNK HIGHWAY 92 FROM THE SAINT ANTHONY CHURCH
IN TERREBONNE, THEN SOUTH 1.0 MILE ON COUNTY ROAD 12, THEN 1.15 MILES WEST ON A GRAVEL ROAD, 44.0 FEET
NORTH OF A GRAVEL ROAD, 0.8 FOOT NORTH OF AN EAST-WEST FENCE, 103.0 FEET EAST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.756 12B = -88.671 09 = -88.605 03 = -88.612



Mn/DOT Name: TERREBONNE RM 2

NGS Name: TERREBONNE RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4983](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/1023
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	9	150 N	43 W	474904.23	960949.24		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2010	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 1 IN.	STEEL ROD ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1964) **Stamping:** TERREBONNE NO 2 1964

1.8 MILES SOUTHWEST OF TERREBONNE, 0.15 MILE WEST ON TRUNK HIGHWAY 92 FROM THE SAINT ANTHONY CHURCH IN TERREBONNE, THEN SOUTH 1.0 MILE ON COUNTY ROAD 12, THEN 1.15 MILES WEST ON A GRAVEL ROAD, 115.0 FEET NORTH OF A TEE-FENCE CORNER, 0.5 FOOT EAST OF AN EAST-WEST FENCE.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -88.756 12B = -88.671 09 = -88.605 03 = -88.612



Mn/DOT Name: TERREBONNE ST ANTHONY CH CUP

NGS Name: TERREBONNE ST ANTHONY CH CUP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1383](#) [Get Map](#)
NGS Quad / Sta Num : 47096113/1011
USGS Quad: TERREBONNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	2	150 N	43 W	474959.00	960807.14		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	1977	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	CHURCH CROSS	NGS

Description: (1977)

Stamping:

IN TERREBONNE, 478.0 FEET WEST ALONG TRUNK HIGHWAY 92 WEST (COUNTY ROAD 12), 275.14 FEET NORTH OF TRUNK HIGHWAY 92.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.874 12B = -88.783 09 = -88.720 03 = -88.727

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 58.99720	96 08 07.13595	556827.136	221986.170	.328	4	ADJUSTMENT	1999	17648
47 49 58.99474	96 08 07.13213	556827.398	221985.922	.328	4	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 49 58.99486	96 08 07.13018	556827.531	221985.934	.328	4	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>								<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 49 59.12166	96 08 05.98148			.100	4	CLASSICAL SURVEY	1964	13522	

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1879389.780	828937.313	870659.177	17396636.953	.328	4	ADJUSTMENT	1999	17648
1879390.031	828937.053	870659.427	17396636.693	.328	4	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1879390.164	828937.060	870659.561	17396636.700	.328	4	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>								<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1254778.937	500862.104			.100	4	CLASSICAL SURVEY	1964	13522	



Mn/DOT Name: TILD

NGS Name: TILD

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DQ7365](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	32	150 N	44 W	474538.31	961914.61	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2010	2023	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 38 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) **Stamping:** TILD 2010

2.5 MILES NORTHWEST OF MARCOUX, 2.5 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 32 IN MARCOUX, AT TRUNK HIGHWAY 2 MILEPOINT 40.50, 40.0 FEET NORTH OF WESTBOUND TRUNK HIGHWAY 2, 50.0 FEET WEST OF DRIVEWAY NUMBER 11937, 3.0 FEET SOUTH OF A RIGHT-OF-WAY POST, 10.0 FEET SOUTHWEST OF A FENCE CORNER, 2.9 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1082.705	.016	2/1					VERTICAL ADJUSTMENT	2025	00000988
1082.705	.016	2/1					VERTICAL CONTROL SURVEY	2023	VRDLK
1082.685	.016	2/1					VERTICAL ADJUSTMENT	2019	00000941
1082.800	.016	2/1					VERTICAL CONTROL SURVEY	2012	VCROO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1082.741	.262			994.316	.197	2011	GPS - RTRN	2019	RTRN2019
1082.800				994.355	.014	2011	HORIZONTAL ADJUSTMENT	2013	GPS2970
1082.800	.131			994.470	.066	1996	GPS - STATIC	2013	HPLK1
1082.800				994.355	.014	2011	GPS - STATIC	2013	HPLK1

Geoid Separations(ft): GEOID18 = -88.461 12B = -88.422 09 = -88.353 03 = -88.330

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 45 38.30586	96 19 14.60957	511300.471	195487.866	.131	3	GPS - RTRN	2019	RTRN2019
47 45 38.30558	96 19 14.60940	511300.482	195487.838	.023		ADJUSTMENT	2013	GPS2970
47 45 38.30558	96 19 14.60940	511300.482	195487.838	.023	C	GPS - STATIC	2013	HPLK1

NAD83(1996)		Red Lake County					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 45 38.30512	96 19 14.61046	511300.410	195487.791	.033	C	GPS - STATIC	2013	HPLK1

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1832790.648	804389.416	824009.100	17372138.933	.131	3	GPS - RTRN	2019	RTRN2019
1832790.659	804389.387	824009.110	17372138.905	.023		ADJUSTMENT	2013	GPS2970
1832790.659	804389.387	824009.110	17372138.905	.023	C	GPS - STATIC	2013	HPLK1

NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
1832790.584	804389.344	824009.036	17372138.861	.033	C	GPS - STATIC	2013	HPLK1



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TILD-DO7365-3N-02OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TILD-DO7365-2-02OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TILD-DO7365-1-02OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Oct 2, 2019
	Oct 2, 2019
	Oct 2, 2019



Mn/DOT Name: TILLY MNDT

NGS Name: TILLY

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1437](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	22	150 N	44 W	474721.32	961601.52		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2005	DESTROYED	Horz=NO Vert=NO	NO			STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (1994) **Stamping:** TILLY 1979

2.0 MILES NORTH OF MARCOUX, 2.0 MILES NORTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 32 MILEPOINT 79.1, 49.8 FEET WEST OF TRUNK HIGHWAY 32, 125.0 FEET NORTH OF A GRAVEL ROAD, 94.0 FEET NORTH-NORTHEAST OF A POWER POLE, 90.2 FEET NORTH OF A RIGHT-OF- WAY POST, 2.0 FEET EAST OF A FENCE LINE, 88.11 FEET NORTH OF TILLY MNDT RM 1, 108.86 FEET NORTHEAST OF TILLY MNDT RM 2, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

THE TIES NO LONGER FIT. IN, 1994 THE GEODETIC UNIT COULD NOT FIND STATION TILLY MNDT AND TILLY MNDT RM 1 AND FOUND TILLY MNDT RM 2 OKAY- STATION TILLY MNDT AND TILLY MNDT RM 1 FALL IN A DITCH BOTTOM OF REBUILT TRUNK HIGHWAY 32.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1089.237	.197		1001.061	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1087.793						RECIPROCAL VERTICAL ANGLE	1979	HORZ

Geoid Separations(ft): GEOID18 = -88.609 12B = -88.550 09 = -88.491 03 = -88.481

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Reference
47 47 21.31714	96 16 01.52193	524479.928	205938.673	.066	2	17648
47 47 21.31516	96 16 01.51828	524480.177	205938.473	.066	2	17655

NAD83(1986)		Red Lake County		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Reference
47 47 21.31493	96 16 01.51537	524480.376	205938.450	.066	2	17289

NAD27		Project Info		
Latitude	Longitude	X	Y	Reference
47 47 21.43146	96 16 00.33690			16409

State Plane and UTM Coordinates (Feet)

NAD83(1996)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Reference
1846397.997	814272.742	837635.092	17382009.302	.066	2	17648
1846398.237	814272.531	837635.333	17382009.091	.066	2	17655

NAD83(1986)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Reference
1846398.435	814272.500	837635.530	17382009.059	.066	2	17289

NAD27		Project Info		
MN State Plane - North Zone		X	Y	Reference
1221788.266	486196.364			16409



Mn/DOT Name: TILLY MNMT AZ MK

NGS Name: TILLY AZ MK

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1434](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	23	150 N	44 W	474720.25	961525.72		3	1979	2005	DESTROYED	Horz=NO Vert=NO	NO			STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	MNMT

Description: (1979) **Stamping:** TILLY 1979

2.0 MILES NORTH OF MARCOUX, 2.0 MILES NORTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, THEN 0.45 MILE EAST ON A GRAVEL ROAD, 27.0 FEET NORTH OF A GRAVEL ROAD, 73.0 FEET WEST OF A 12.0 INCH DIAMETER COTTONWOOD TREE, 1.5 FEET SOUTH OF A FENCE LINE, 1.5 FEET SOUTH OF A WITNESS POST.

Station Notes

THE AREA WAS DITCHED, AND THE ROAD WAS REBUILT.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1083.987	.262		995.821	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1081.100						RECIPROCAL VERTICAL ANGLE	1979	HORZ

Geoid Separations(ft): GEOID18 = -88.596 12B = -88.533 09 = -88.474 03 = -88.468

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 47 20.24542	96 15 25.71819	526925.064	205833.381	.131	3	ADJUSTMENT	1999	17648
47 47 20.24340	96 15 25.71454	526925.313	205833.176	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>Geodetic Position</u>		<u>Red Lake County</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 47 20.24320	96 15 25.71168	526925.508	205833.156	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
47 47 20.36025	96 15 24.53438			.100	3	CLASSICAL SURVEY	1981	16409

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1848836.167	814064.270	840074.043	17381797.610	.131	3	ADJUSTMENT	1999	17648
1848836.408	814064.056	840074.283	17381797.395	.131	3	ADJUSTMENT	1998	17655

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
1848836.603	814064.027	840074.478	17381797.367	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
1224226.431	485987.955			.100	3	CLASSICAL SURVEY	1981	16409



Mn/DOT Name: TILLY MNDT RM 1

NGS Name: TILLY RM 1

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4996](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	150 N	44 W	474721.00	961601.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2005	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1979) **Stamping:** TILLY NO 1 1979

2.0 MILES NORTH OF MARCOUX CORNERS, 2.1 MILES NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, 50.0 FEET WEST OF TRUNK HIGHWAY 32, 37.0 FEET NORTH OF A GRAVEL ROAD, 24.0 FEET EAST OF A POWER POLE, 2.1 FEET NORTH OF A RIGHT-OF-WAY POST, 53.5 FEET EAST-NORTHEAST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -88.609 12B = -88.550 09 = -88.491 03 = -88.481



Mn/DOT Name: TILLY MNDT RM 2

NGS Name: TILLY RM 2

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [CP4997](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	22	150 N	44 W	474721.00	961601.00	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2019	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1979)

Stamping: TILLY NO 2 1979

2.0 MILES NORTH OF MARCOUX CORNERS, 2.1 MILES NORTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND TRUNK HIGHWAY 2, 100.6 FEET WEST OF TRUNK HIGHWAY 32, 9.5 FEET WEST OF A RIGHT-OF-WAY POST, 28.0 FEET NORTH OF A GRAVEL ROAD, 4.9 FEET WEST OF A POWER POLE, 1.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1089.479	.016	2/1					VERTICAL ADJUSTMENT	2025	00000988
1089.479	.016	2/1					VERTICAL CONTROL SURVEY	2023	VRDLK

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1089.565	.262			1000.956	.197	2011	GPS - RTRN	2019	RTRN2019

Geoid Separations(ft): GEOID18 = -88.609 12B = -88.550 09 = -88.491 03 = -88.481

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				Red Lake County				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 47 20.36125	96 16 02.24609			524430.600	205841.747	.131	3	GPS - RTRN	2019	RTRN2019

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
1846344.626	814177.999			837581.576	17381914.586	.131	3	GPS - RTRN	2019	RTRN2019

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TILLY_RM_2-CP4997-3W-01OCT2019.jpg	W	Oct 1, 2019
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TILLY_RM_2-CP4997-2-01OCT2019.jpg		Oct 1, 2019
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TILLY_RM_2-CP4997-1-01OCT2019.jpg		Oct 1, 2019

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TONY

NGS Name: TONY

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DR8861](#) [Get Map](#)
NGS Quad / Sta Num : 47096111/
USGS Quad: PLUMMER

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	22	151 N	42 W	475238.19	960110.18		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2018	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2018)

Stamping: TONY 2018

2.7 MILES SOUTHEAST OF PLUMMER, 2.1 MILES SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 59 FROM THE JUNCTION OF TRUNK HIGHWAY 59 AND COUNTY ROAD 1 IN PLUMMER, AT TRUNK HIGHWAY 59 MILEPOINT 338.85, 32.6 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 59, 312.8 FEET NORTH-NORTHWEST OF COUNTY ROAD 20 (200TH STREET SOUTHEAST), 1.5 FEET WEST-SOUTHWEST OF A WITNESS POST.

Station Pair: DUFUS - RED LAKE, MN

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1134.040			1044.929	.026	2011	HORIZONTAL ADJUSTMENT	2023	GPS3597
1134.033	.131		1045.070	.066	1996	GPS - STATIC	2023	HERSK
1134.040			1044.929	.026	2011	GPS - STATIC	2023	HERSK
1133.968	.262		1044.821	.197	2011	GPS - RTRN	2018	RTRN2018

Geoid Separations(ft): GEOID18 = -89.245 12B = -89.144 09 = -89.084 03 = -89.065

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 52 38.19124	96 01 10.18331	585203.608	238224.234	.013		ADJUSTMENT	2023	GPS3597
47 52 38.19124	96 01 10.18331	585203.608	238224.234	.013	C	GPS - STATIC	2023	HERSK
47 52 38.19089	96 01 10.18357	585203.590	238224.198	.131	3	GPS - RTRN	2018	RTRN2018

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 52 38.19099	96 01 10.18403	585203.559	238224.208	.033	C	GPS - STATIC	2023	HERSK

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1908422.969	843959.982	899722.344	17411626.406	.013		ADJUSTMENT	2023	GPS3597
1908422.969	843959.982	899722.344	17411626.406	.013	C	GPS - STATIC	2023	HERSK
1908422.950	843959.947	899722.325	17411626.371	.131	3	GPS - RTRN	2018	RTRN2018

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1908422.919	843959.958	899722.294	17411626.383	.033	C	GPS - STATIC	2023	HERSK

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TONY-DR8861-3W-23OCT2018.jpg	W	Oct 23, 2018
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TONY-DR8861-2-23OCT2018.jpg		Oct 23, 2018
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/TONY-DR8861-1-23OCT2018.jpg		Oct 23, 2018

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: VERS MNDT TEMP

NGS Name: VERS TEMP

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [SL1435](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	27	151 N	44 W	475207.27	961559.07		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2019	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
PIPE (<10 FT)	UNMONUMENTED	MNDT

Description: (1979)

Stamping: VERS 1979

AT THE SOUTH EDGE OF RED LAKE FALLS, 0.8 MILE EAST AND SOUTH ON TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11, 31.5 FEET EAST OF TRUNK HIGHWAY 32, 10.0 FEET SOUTH OF AN ENTRANCE, 112.1 FEET WEST-SOUTHWEST OF A POWER POLE, 31.8 FEET NORTHWEST OF A RIGHT-OF-WAY POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88						Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1043.961	.197		955.336	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29						Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1042.616						RECIPROCAL VERTICAL ANGLE	1979	HORZ

Geoid Separations(ft): GEOID18 = -89.068 12B = -88.970 09 = -88.927 03 = -88.947

Lat/Lon and County Coordinates (Feet)

NAD83(1996)						Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 07.26566	96 15 59.06715	524609.974	234915.019	.066	2	ADJUSTMENT	1999	17648
47 52 07.26353	96 15 59.06291	524610.263	234914.804	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)						Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 07.26306	96 15 59.06039	524610.435	234914.756	.066	2	ADJUSTMENT	1986	17289

NAD27						Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 52 07.38030	96 15 57.89016			.100	2	CLASSICAL SURVEY	1981	16409

State Plane and UTM Coordinates (Feet)

NAD83(1996)						Project Info		
MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Year	Reference
X	Y	X	Y					
1847751.921	843213.764	839027.534	17410961.018	.066	2	ADJUSTMENT	1999	17648
1847752.200	843213.537	839027.814	17410960.790	.066	2	ADJUSTMENT	1998	17655

NAD83(1986)						Project Info		
MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Year	Reference
X	Y	X	Y					
1847752.370	843213.483	839027.983	17410960.735	.066	2	ADJUSTMENT	1986	17289

NAD27						Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
X	Y							
1223141.522	515137.376			.100	2	CLASSICAL SURVEY	1981	16409



Mn/DOT Name: WHEAG

NGS Name: WHEAG

County: RED LAKE, MN (Sheet 1)

NGS ACRN: [DN8400](#) [Get Map](#)
NGS Quad / Sta Num : 47096142/
USGS Quad: MARCOUX CORNERS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	27	151 N	44 W	475207.67	961600.53	2	C	2010	2023	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2010) Stamping: WHEAG 2010

0.5 MILE SOUTH OF RED LAKE FALLS, 0.75 MILE SOUTH ALONG TRUNK HIGHWAY 32 FROM THE JUNCTION OF TRUNK HIGHWAY 32 AND COUNTY ROAD 11 IN RED LAKE FALLS, AT TRUNK HIGHWAY MILEPOINT 84.65, 22.8 FEET NORTH OF COUNTY ROAD 33, 67.0 FEET WEST OF TRUNK HIGHWAY 32, 78.6 FEET SOUTH-SOUTHEAST OF A TELEPHONE PEDESTAL.

Station Notes

WITNESS POST REMOVED.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1042.632	.016	2/1				VERTICAL ADJUSTMENT	2025	00000988
1042.439	.016	2/1				VERTICAL CONTROL SURVEY	2023	VRDLK
1042.511	.016	2/1				VERTICAL ADJUSTMENT	2019	00000941
1042.632	.016	2/1				VERTICAL CONTROL SURVEY	2011	VTH32

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1042.491	.262		953.423	.197	2011	GPS - RTRN	2019	RTRN2019
1042.632			953.555	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1042.632			953.555	.011	2011	GPS - STATIC	2013	HTERR
1042.649	.131		953.686	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.071 12B = -88.970 09 = -88.927 03 = -88.947

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 07.66938	96 16 00.53156	524510.071	234955.800	.131	3	GPS - RTRN	2019	RTRN2019
47 52 07.66710	96 16 00.53280	524509.987	234955.569	.013		ADJUSTMENT	2013	GPS2946
47 52 07.66710	96 16 00.53280	524509.987	234955.569	.013	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>Red Lake County</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 52 07.66658	96 16 00.53354	524509.937	234955.517	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1847653.843	843258.724	838929.475	17411006.127	.131	3	GPS - RTRN	2019	RTRN2019
1847653.750	843258.497	838929.381	17411005.900	.013		ADJUSTMENT	2013	GPS2946
1847653.750	843258.497	838929.381	17411005.900	.013	C	GPS - STATIC	2013	HTERR

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1847653.697	843258.446	838929.328	17411005.850	.033	C	GPS - STATIC	2012	HTERR



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/WHEAG-DN8400-3W-10OCT2019.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/WHEAG-DN8400-2-10OCT2019.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/WHEAG-DN8400-1-10OCT2019.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	Oct 10, 2019
	Oct 10, 2019
	Oct 10, 2019



Mn/DOT Name: YAGBOMB

NGS Name: YAGBOMB

County: RED LAKE, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	31	151 N	42 W	475144.16	955757.85		C

NGS ACRN: [DO8542](#)
NGS Quad / Sta Num : 47095443/
USGS Quad: OKLEE SW

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2008	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	SURVEY DISK	MN-125

Description: (2008)

Stamping: YAGBOMB 2008

4.7 MILES SOUTHEAST OF PLUMMER, 3.1 MILES EAST ALONG COUNTY ROAD 1 FROM THE JUNCTION OF COUNTY ROAD 1 AND TRUNK HIGHWAY 59 IN PLUMMER, THEN 3.0 MILES SOUTH ON COUNTY ROAD 129 (240TH AVENUE SOUTHEAST), 95.5 FEET SOUTHEAST OF A POWER POLE, 90.0 FEET EAST OF COUNTY ROAD 129 (240TH AVENUE SOUTHEAST), 62.0 FEET EAST OF THE SOUTH END OF A CORRUGATED METAL PIPE, 41.7 FEET SOUTH OF COUNTY ROAD 21 (210TH STREET SOUTHEAST), 2.1 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1143.154	.262		1053.879	.197	2011	GPS - OPUS	2022	GPSBM
1143.137	.262		1053.859	.197	2011	GPS - RTRN	2021	RTRN2021
1143.128			1053.850	.011	2011	HORIZONTAL ADJUSTMENT	2013	GPS2946
1143.128			1053.850	.011	2011	GPS - STATIC	2013	HTERR
1143.141	.131		1054.033	.066	1996	GPS - STATIC	2012	HTERR

Geoid Separations(ft): GEOID18 = -89.278 12B = -89.199 09 = -89.124 03 = -89.088

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 51 44.15864	95 57 57.84721	598343.983	232812.385	.131	3	GPS - OPUS	2022	GPSBM
47 51 44.15917	95 57 57.84670	598344.018	232812.439	.131	3	GPS - RTRN	2021	RTRN2021
47 51 44.15885	95 57 57.84681	598344.011	232812.406	.013		ADJUSTMENT	2013	GPS2946
47 51 44.15885	95 57 57.84681	598344.011	232812.406	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

Geodetic Position		Red Lake County		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 51 44.15847	95 57 57.84776	598343.946	232812.368	.033	C	GPS - STATIC	2012	HTERR

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1921321.210	837998.627	912616.670	17405646.024	.131	3	GPS - OPUS	2022	GPSBM
1921321.247	837998.680	912616.707	17405646.077	.131	3	GPS - RTRN	2021	RTRN2021
1921321.238	837998.647	912616.698	17405646.045	.013		ADJUSTMENT	2013	GPS2946
1921321.238	837998.647	912616.698	17405646.045	.013	C	GPS - STATIC	2013	HTERR

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
1921321.172	837998.611	912616.631	17405646.009	.033	C	GPS - STATIC	2012	HTERR

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/YAGBOMB-DO8542-3S-20OCT2021.jpg	S	Oct 20, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/YAGBOMB-DO8542-2-20OCT2021.jpg		Oct 20, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/red_lake/YAGBOMB-DO8542-1-20OCT2021.jpg		Oct 20, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **