

**- 1/2/2020 DRAFT -  
FOR REVIEW PURPOSES**



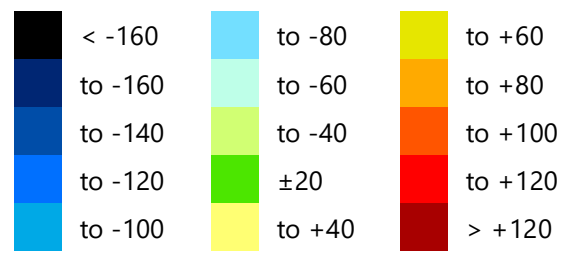
48° 45' N

47° 30' N

Montana

### North Dakota Zone: 1 Williston

**Linear Distortion  
at the Topographic Surface**  
*in parts per million (ppm)*



**Distortion Values for Zone**  
*in parts per million (ppm)*

**Min:** -35    **Range:** 97.4  
**Max:** 62.4    **Mean:** -1.364

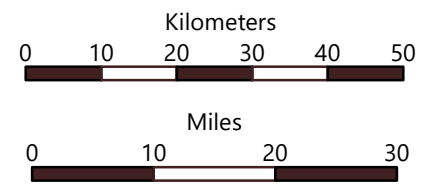
**Area of the zone that is within:**

± 10ppm: 62%    ± 25ppm: 95%  
± 20ppm: 91%    ± 30ppm: 98%

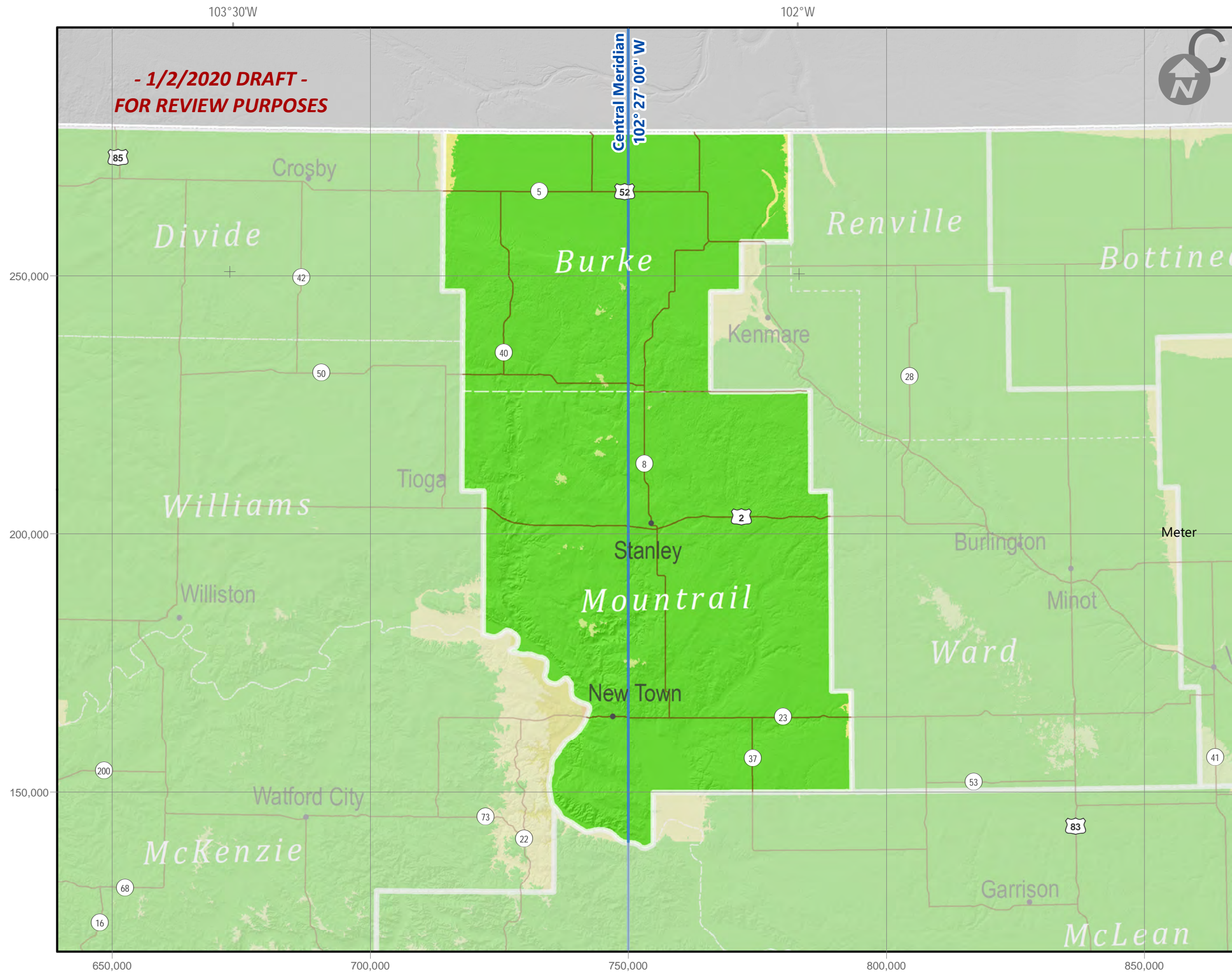
**Transverse Mercator**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 30' N  
Central Meridian: 103° 27' W  
False Northing: 0  
False Easting: 450,000  
Central Meridian Scale: 1.000 092

Map Scale 1:1,000,000

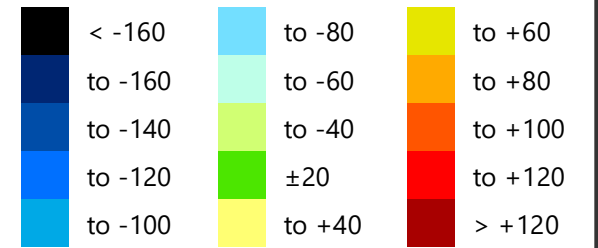


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## North Dakota Zone: 2 New Town

**Linear Distortion  
at the Topographic Surface**  
*in parts per million (ppm)*



**Distortion Values for Zone**  
*in parts per million (ppm)*

**Min:** -23.3    **Range:** 46.2  
**Max:** 22.9    **Mean:** -1.102

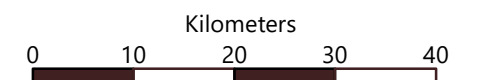
**Area of the zone that is within:**

± 10ppm: 60%    ± 25ppm: 100%  
± 20ppm: 99%    ± 30ppm: 100%

### Transverse Mercator

Linear Unit: Meter  
Latitude of Grid Origin: 46° 30' N  
Central Meridian: 102° 27' W  
False Northing: 0  
False Easting: 750,000  
Central Meridian Scale: 1.000 094

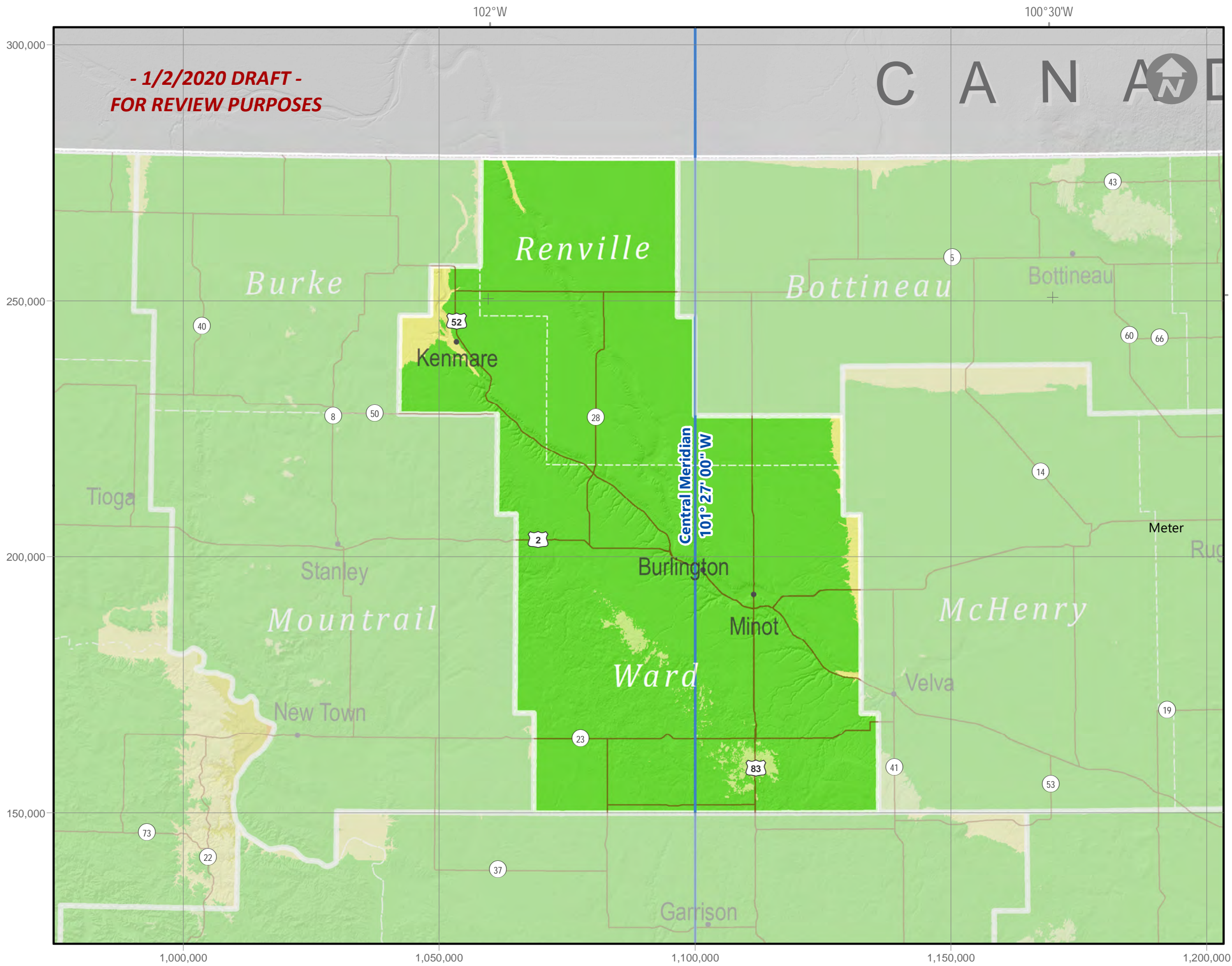
Map Scale 1:750,000



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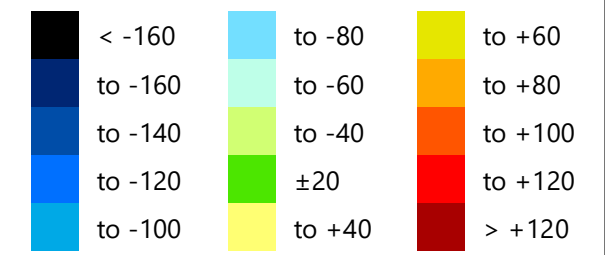
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CANAD



**North Dakota  
Zone: 3 Minot**

**Linear Distortion  
at the Topographic Surface  
in parts per million (ppm)**



**Distortion Values for Zone  
in parts per million (ppm)**

**Min:** -24.8    **Range:** 53.8  
**Max:** 29      **Mean:** 0.483

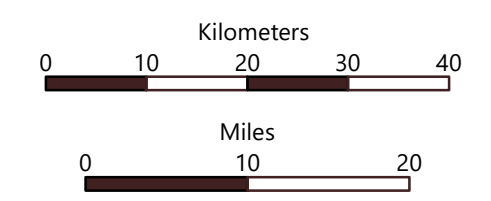
**Area of the zone that is within:**

± 10ppm: 58%    ± 25ppm: 100%  
± 20ppm: 96%    ± 30ppm: 100%

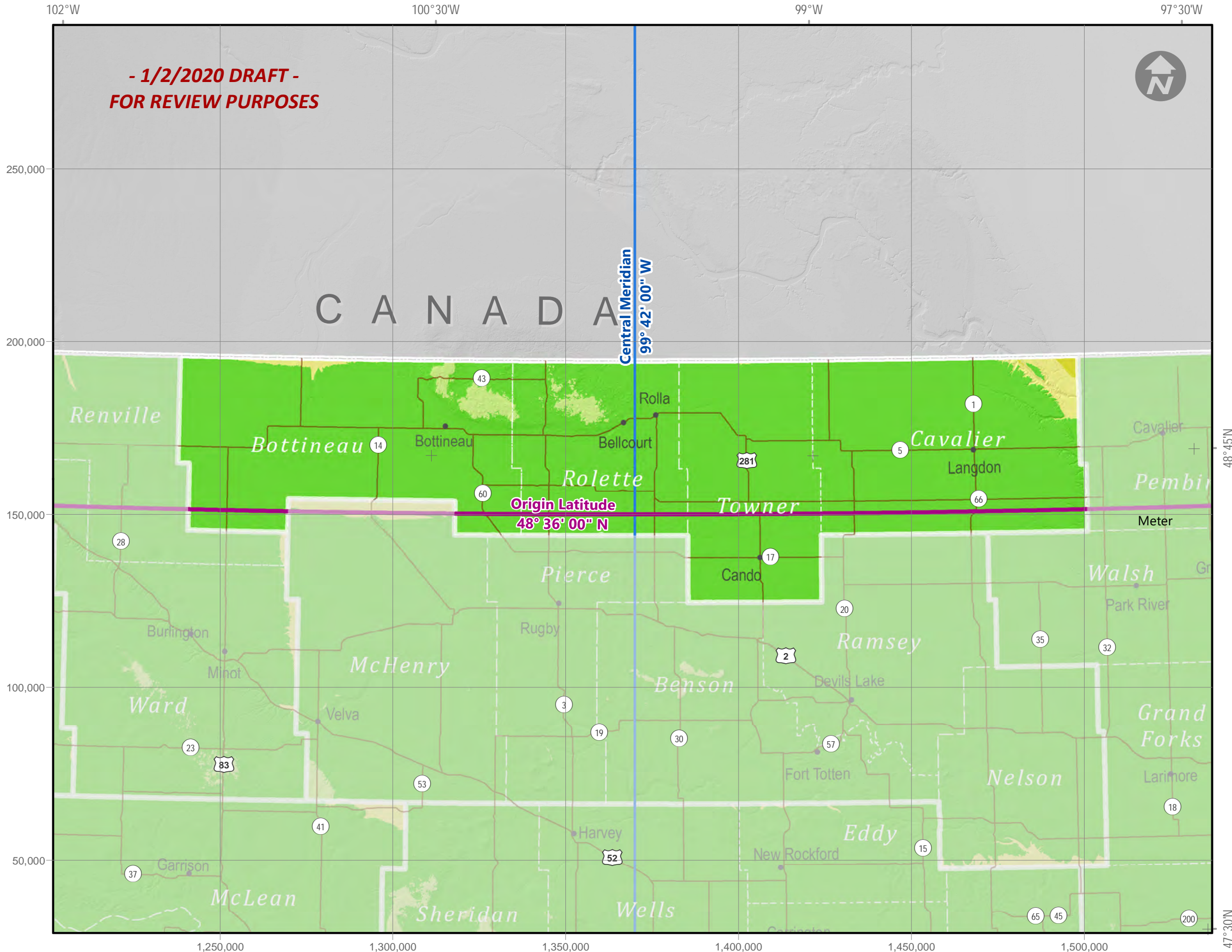
**Transverse Mercator**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 30' N  
Central Meridian: 101° 27' W  
False Northing: 0  
False Easting: 1,100,000  
Central Meridian Scale: 1.000 080

Map Scale 1:750,000

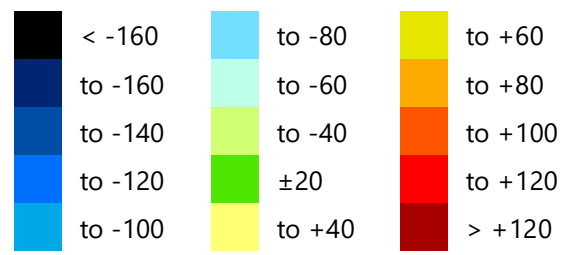


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**North Dakota  
Zone: 4 Bottineau**

**Linear Distortion  
at the Topographic Surface  
in parts per million (ppm)**



**Distortion Values for Zone  
in parts per million (ppm)**

**Min:** -31.1    **Range:** 80.2  
**Max:** 49.1    **Mean:** -0.008

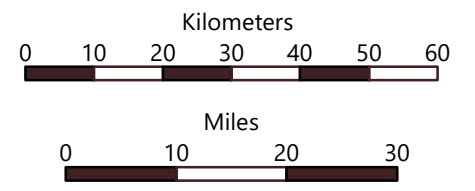
**Area of the zone that is within:**

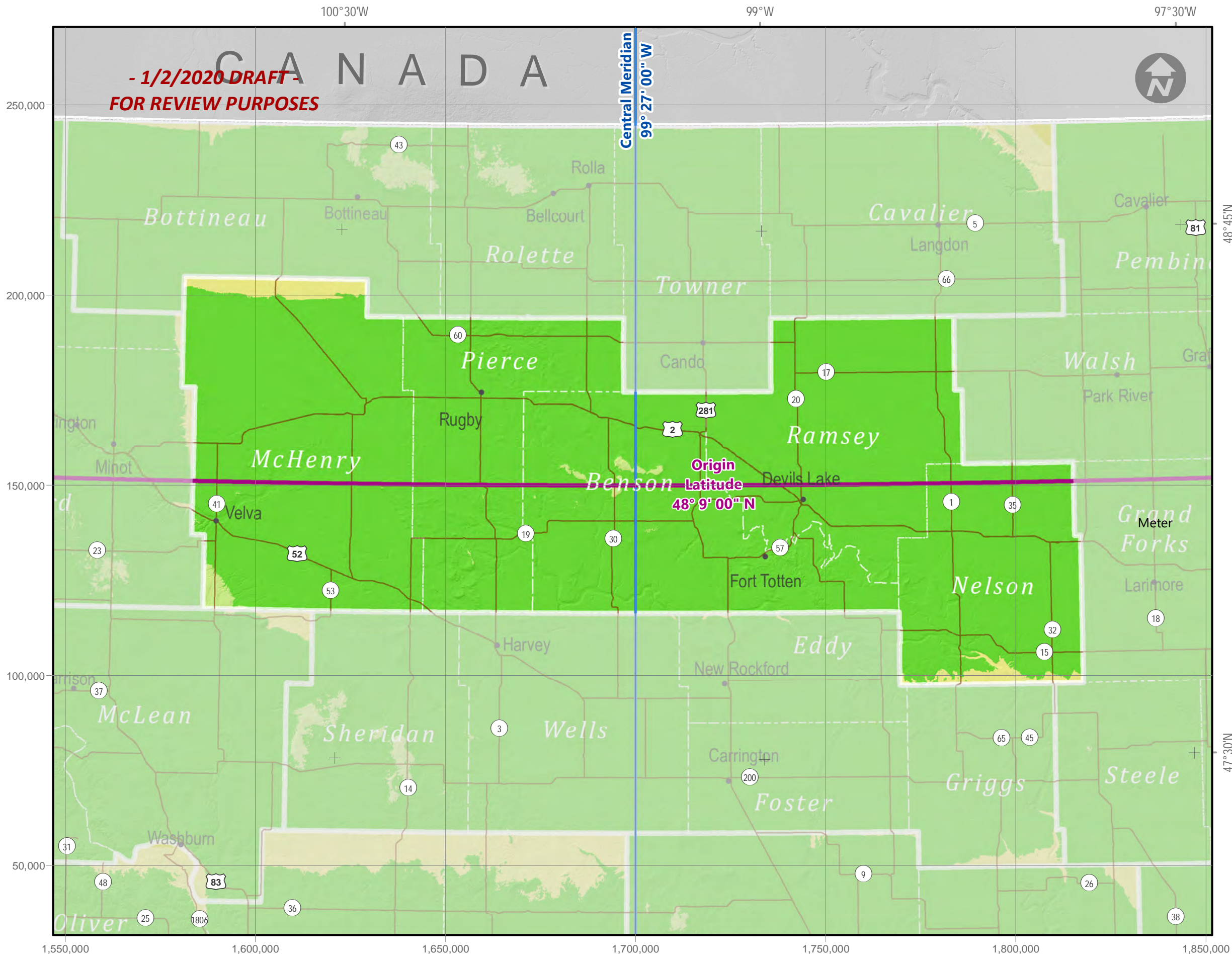
± 10ppm: 75%    ± 25ppm: 99%  
± 20ppm: 96%    ± 30ppm: 99%

**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 48° 36' N  
Central Meridian: 99° 42' W  
False Northing: 150,000  
False Easting: 1,370,000  
Central Meridian Scale: 1.000 066

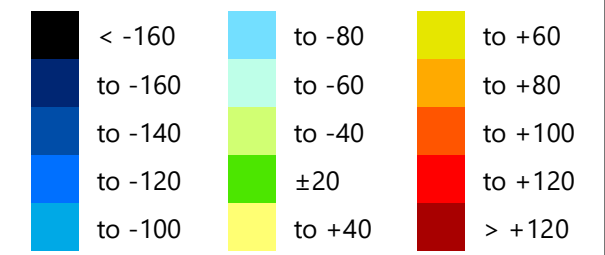
Map Scale 1:1,100,000





## North Dakota Zone: 5 Devils Lake

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -34.5    **Range:** 66  
**Max:** 31.5    **Mean:** -5.909

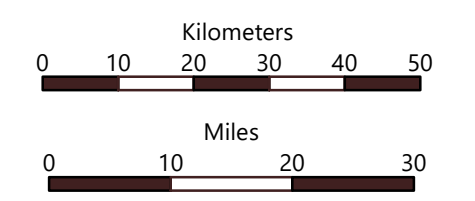
**Area of the zone that is within:**

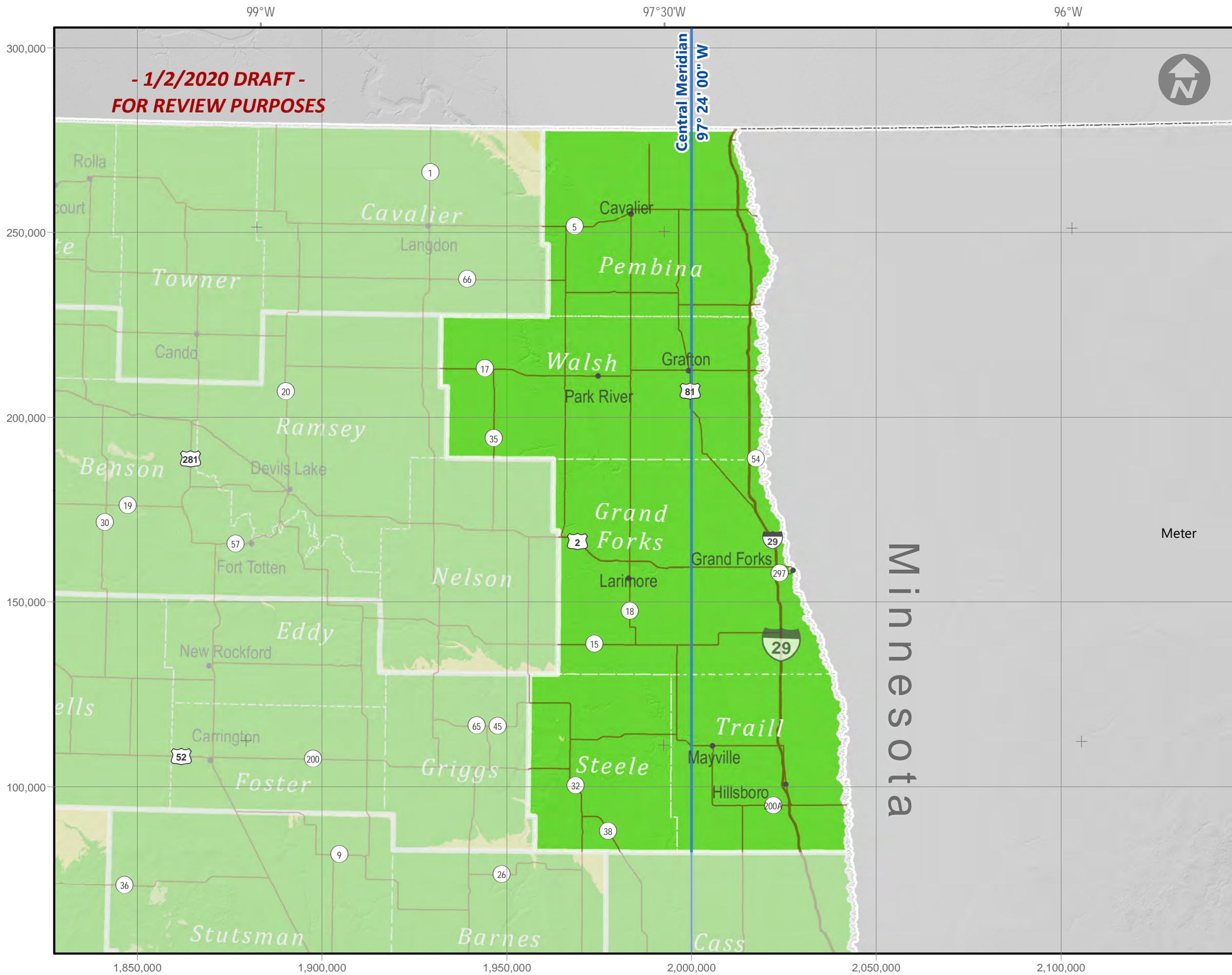
± 10ppm: 53%    ± 25ppm: 100%  
± 20ppm: 97%    ± 30ppm: 100%

**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 48° 09' N  
Central Meridian: 99° 27' W  
False Northing: 150,000  
False Easting: 1,700,000  
Central Meridian Scale: 1.000 056

Map Scale 1:1,000,000





## North Dakota Zone: 6 Grand Forks

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### Linear Distortion at the Topographic Surface in parts per million (ppm)

	< -160		to -80		to +60
	to -160		to -60		to +80
	to -140		to -40		to +100
	to -120		±20		to +120
	to -100		to +40		> +120

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### Distortion Values for Zone in parts per million (ppm)

**Min:** -21.1      **Range:** 42.6  
**Max:** 21.5      **Mean:** -3.536

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### Area of the zone that is within:

± 10ppm: 71%	± 25ppm: 100%
± 20ppm: 100%	± 30ppm: 100%

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### Transverse Mercator

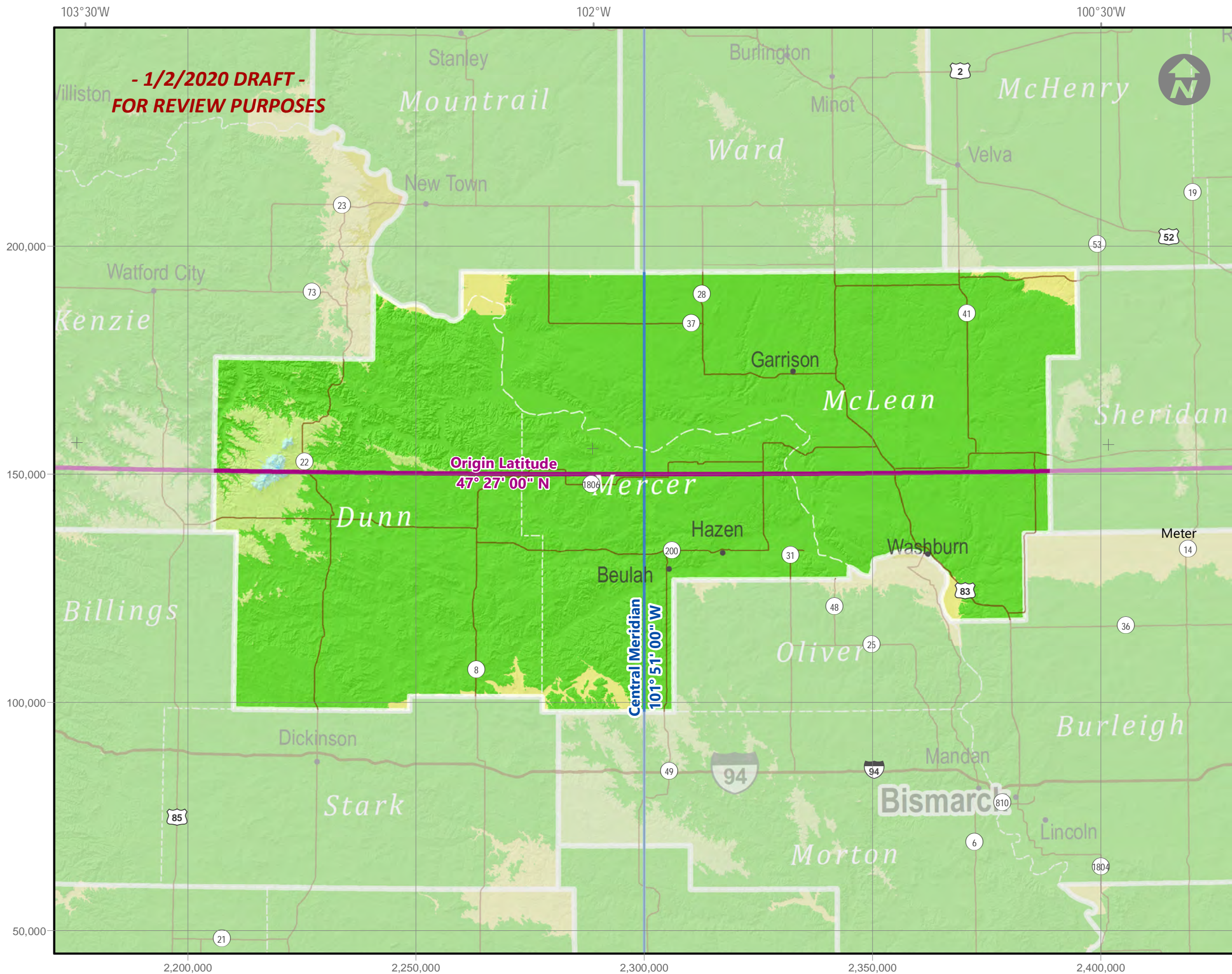
Linear Unit: Meter  
Latitude of Grid Origin: 46° 30' N  
Central Meridian: 97° 25' W  
False Northing: 0  
False Easting: 2,000,000  
Central Meridian Scale: 1.000 034

Map Scale 1:1,050,000

Kilometers

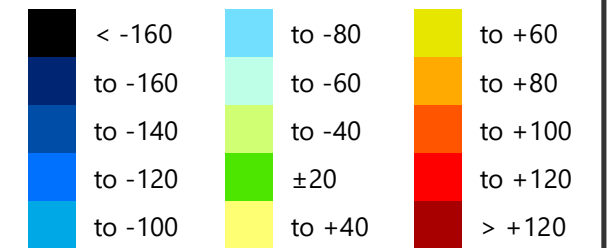
Miles

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## North Dakota Zone: 7 Beulah

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -64.4    **Range:** 105.1  
**Max:** 40.8    **Mean:** 1.903

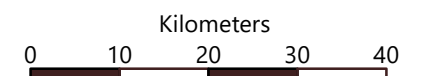
**Area of the zone that is within:**

± 10ppm: 61%    ± 25ppm: 97%  
± 20ppm: 93%    ± 30ppm: 99%

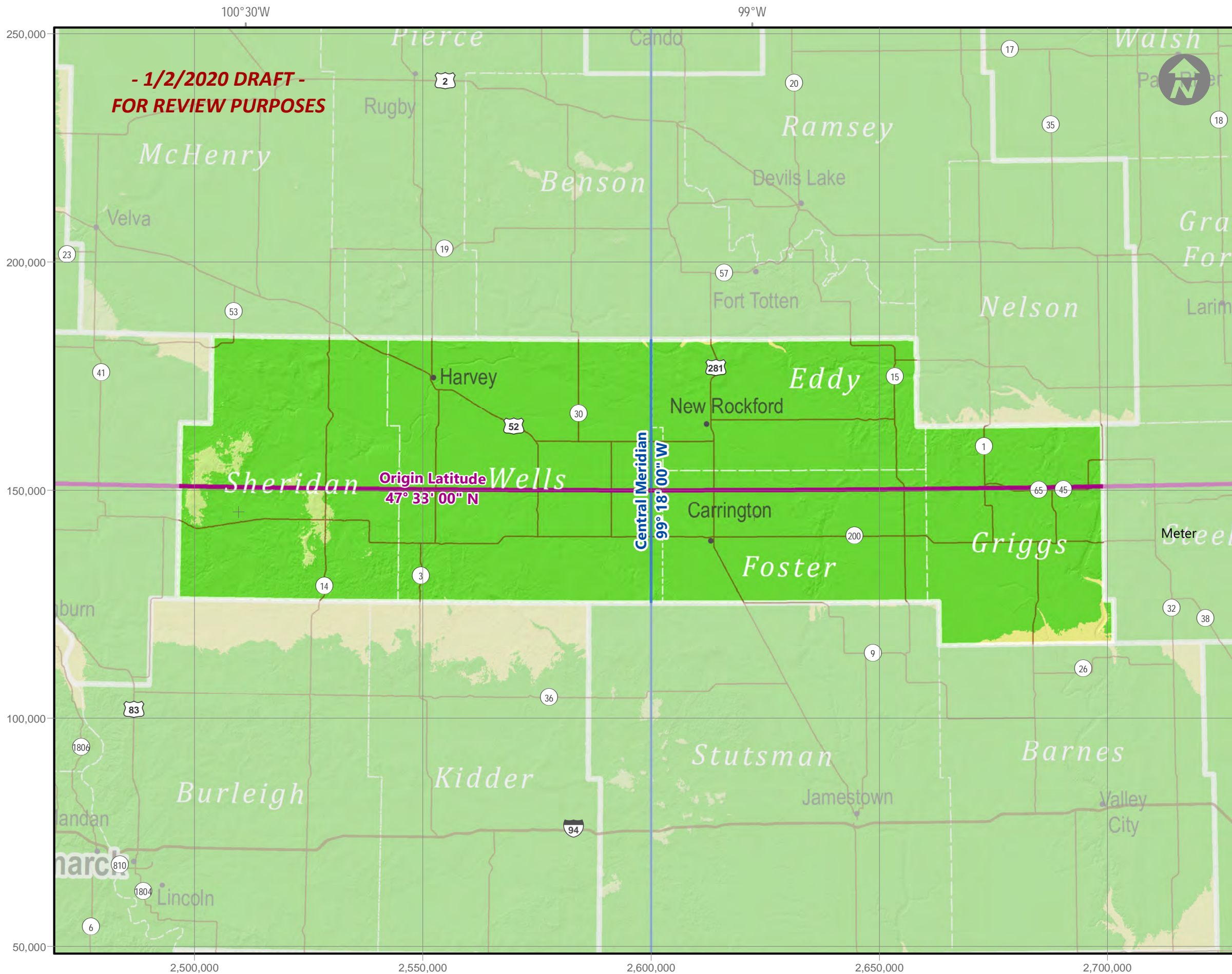
**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 47° 27' N  
Central Meridian: 101° 51' W  
False Northing: 150,000  
False Easting: 2,300,000  
Central Meridian Scale: 1.000 090

Map Scale 1:850,000

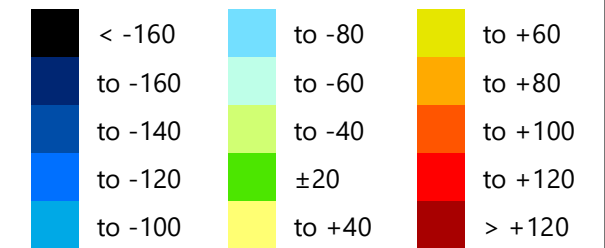


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## North Dakota Zone: 8 Carrington

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -31.7    **Range:** 61.8  
**Max:** 30.1    **Mean:** 0.962

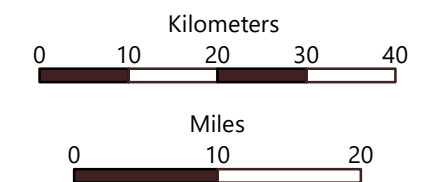
**Area of the zone that is within:**

± 10ppm: 66%    ± 25ppm: 100%  
± 20ppm: 98%    ± 30ppm: 100%

**Lambert Conformal Conic**

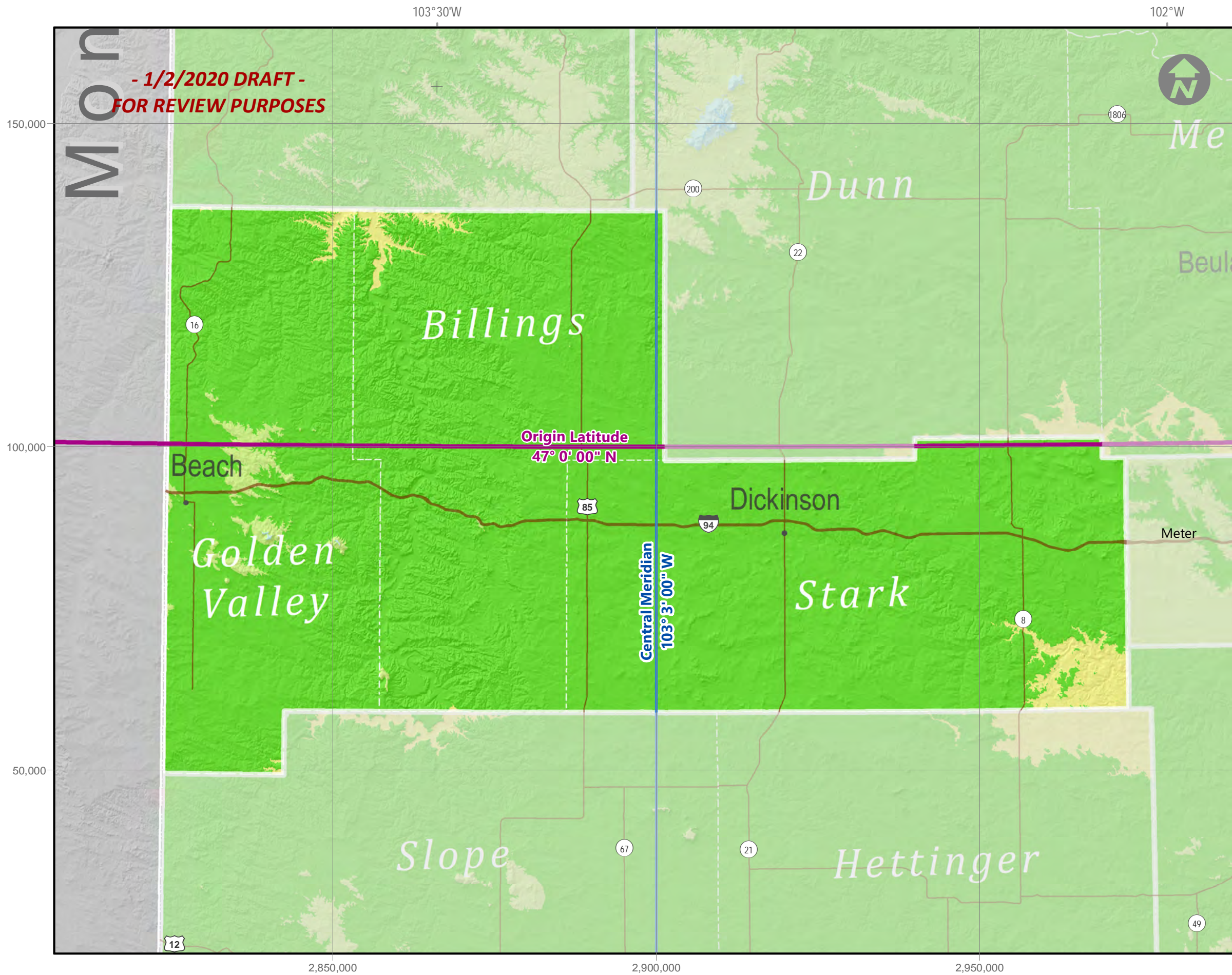
Linear Unit: Meter  
Latitude of Grid Origin: 47° 33' N  
Central Meridian: 99° 18' W  
False Northing: 150,000  
False Easting: 2,600,000  
Central Meridian Scale: 1.000 072

Map Scale 1:850,000



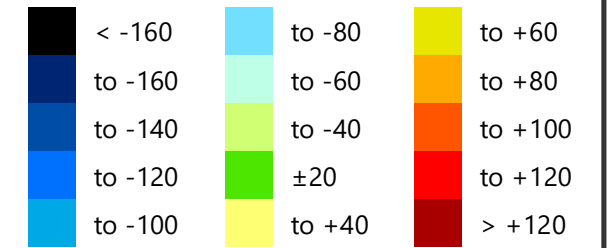
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## North Dakota Zone: 9 Dickinson

**Linear Distortion  
at the Topographic Surface**  
*in parts per million (ppm)*



**Distortion Values for Zone**  
*in parts per million (ppm)*

**Min:** -46.3    **Range:** 78.2  
**Max:** 31.9    **Mean:** -0.971

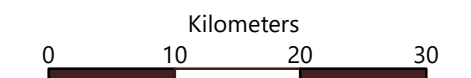
**Area of the zone that is within:**

± 10ppm: 68%    ± 25ppm: 99%  
± 20ppm: 96%    ± 30ppm: 100%

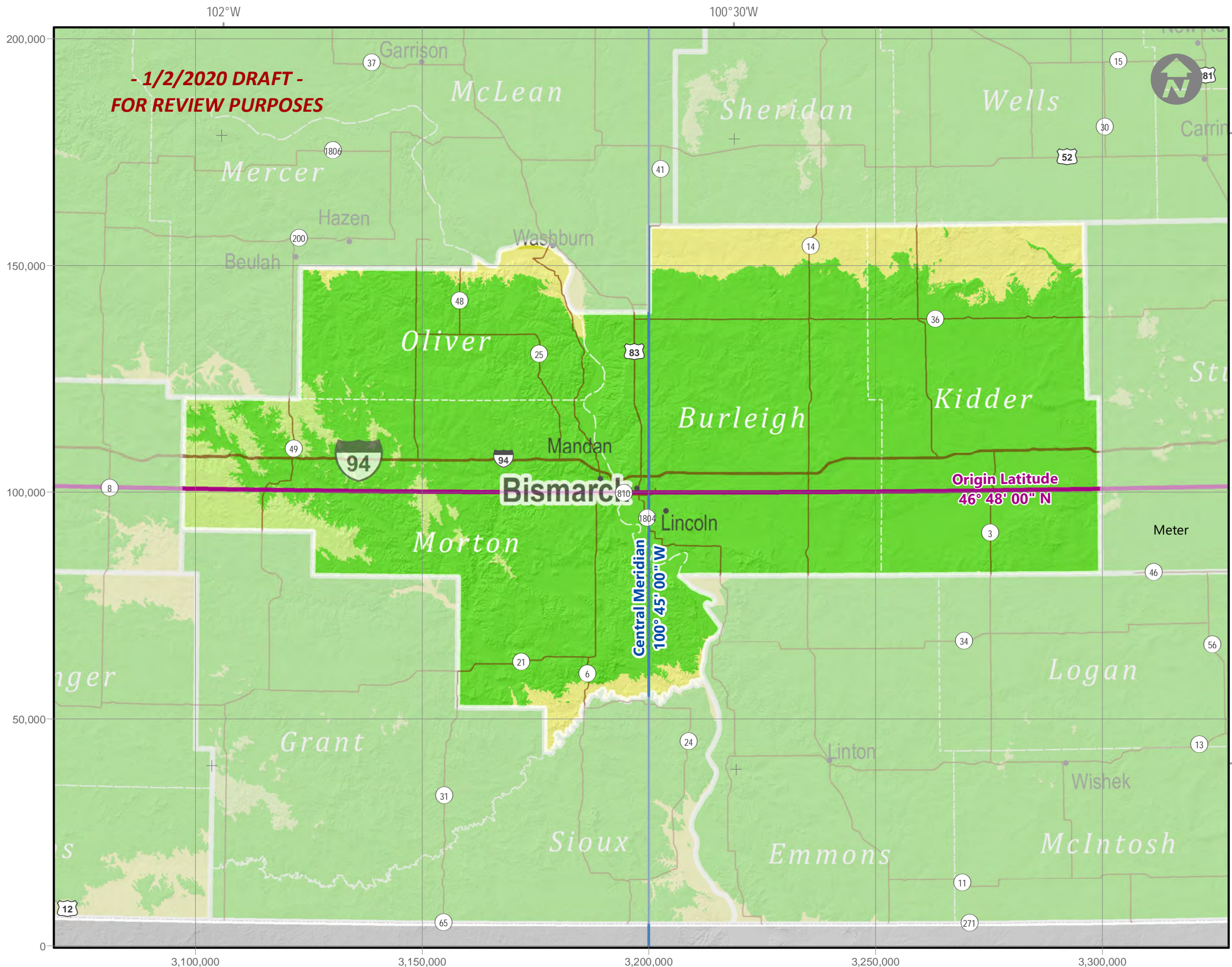
**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 47° 00' N  
Central Meridian: 103° 03' W  
False Northing: 100,000  
False Easting: 2,900,000  
Central Meridian Scale: 1.000 112

Map Scale 1:600,000



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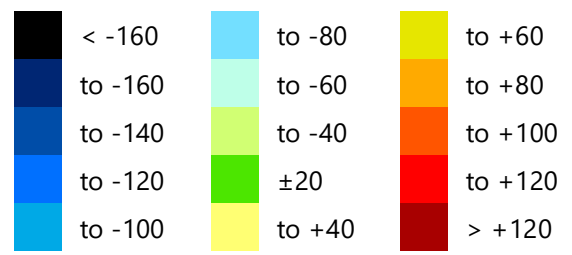


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### North Dakota Zone: 10 Bismarck

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -37.7    **Range:** 80.4  
**Max:** 42.7    **Mean:** 1.035

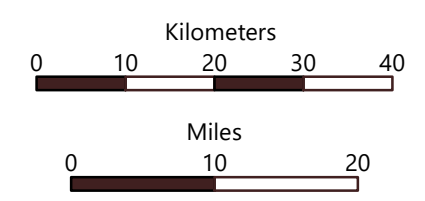
**Area of the zone that is within:**

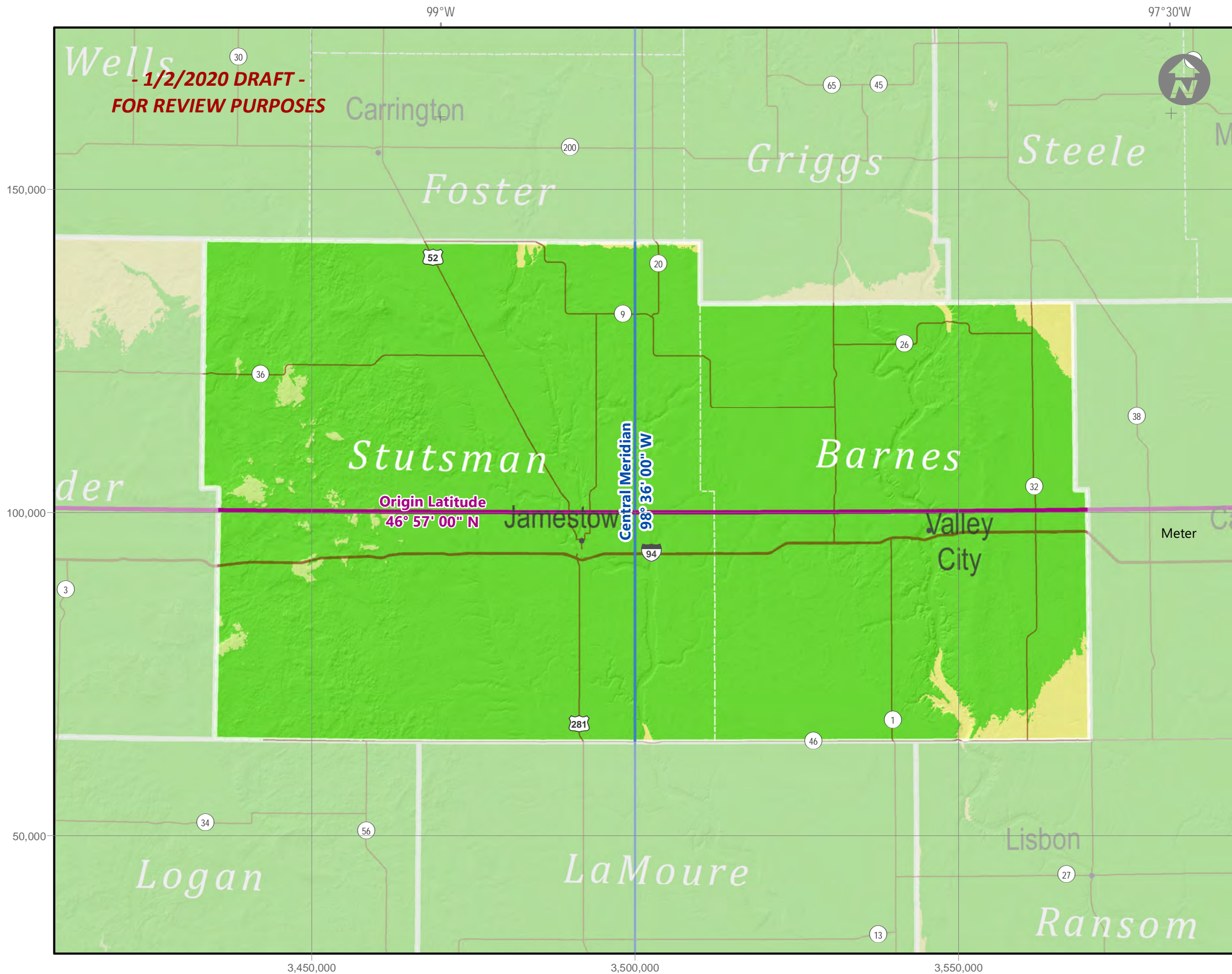
± 10ppm: 57%    ± 25ppm: 92%  
± 20ppm: 85%    ± 30ppm: 97%

**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 48' N  
Central Meridian: 100° 45' W  
False Northing: 100,000  
False Easting: 3,200,000  
Central Meridian Scale: 1.000 081

Map Scale 1:850,000



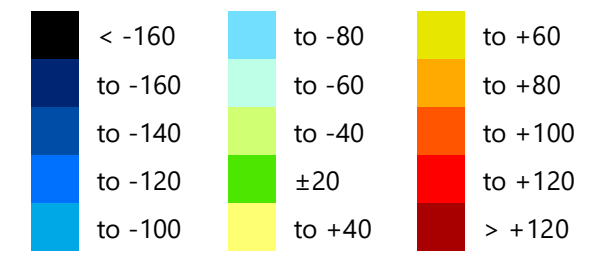


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### North Dakota Zone: 11 Jamestown

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -25     **Range:** 56.7  
**Max:** 31.7     **Mean:** 2.004

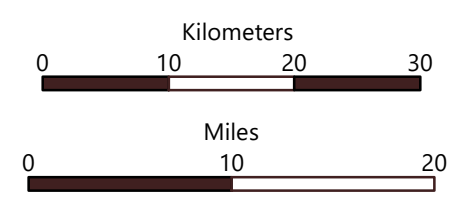
**Area of the zone that is within:**

± 10ppm: 55%     ± 25ppm: 100%  
± 20ppm: 97%     ± 30ppm: 100%

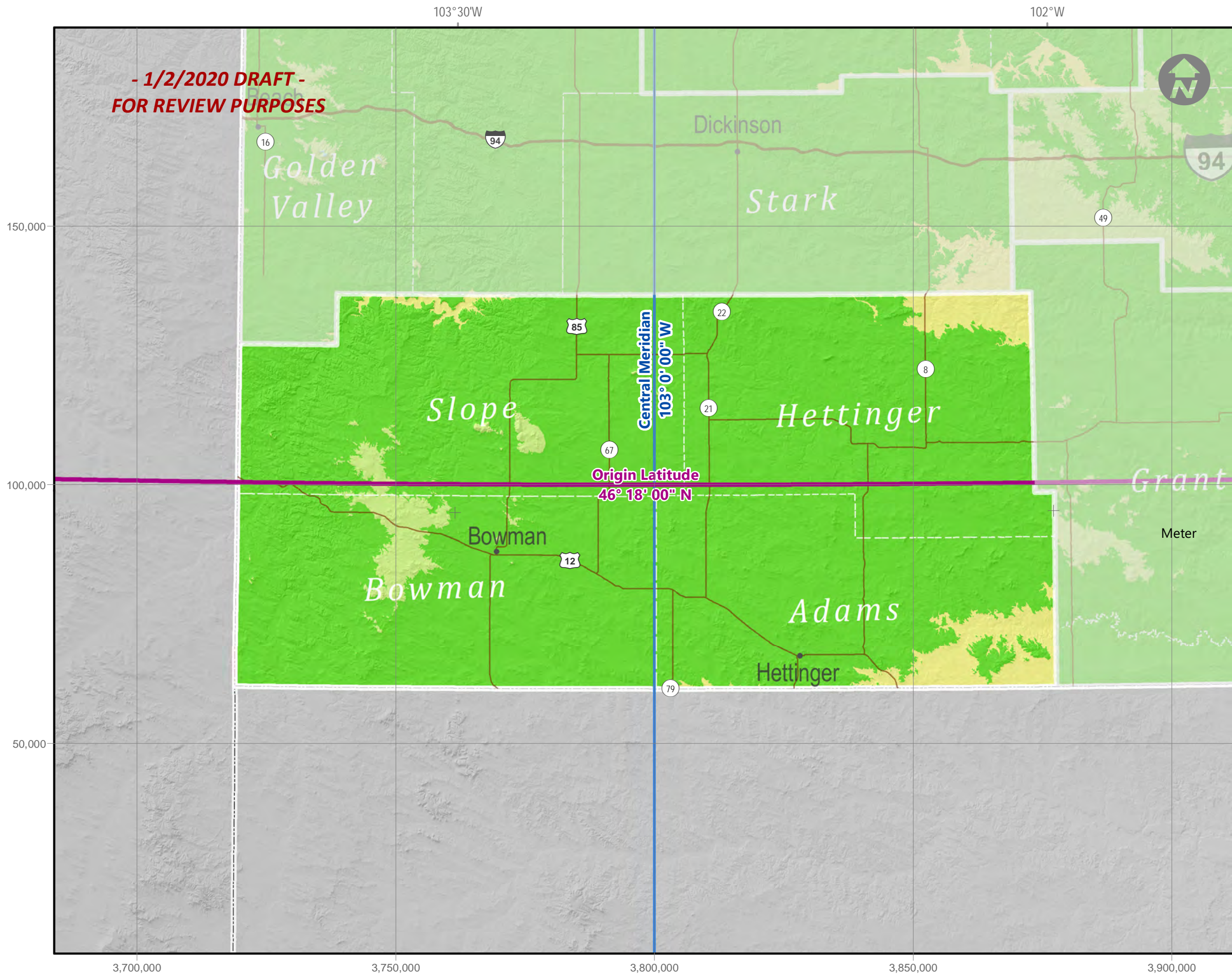
**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 57' N  
Central Meridian: 98° 36' W  
False Northing: 100,000  
False Easting: 3,500,000  
Central Meridian Scale: 1.000 067

Map Scale 1:600,000

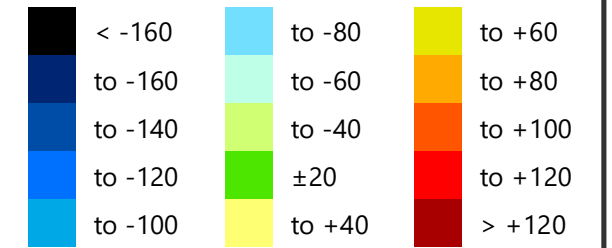


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## North Dakota Zone: 12 Bowman

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -38.5    **Range:** 77.2  
**Max:** 38.7    **Mean:** 1.498

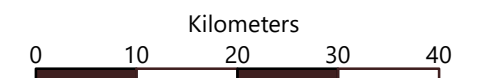
**Area of the zone that is within:**

± 10ppm: 55%    ± 25ppm: 98%  
± 20ppm: 93%    ± 30ppm: 100%

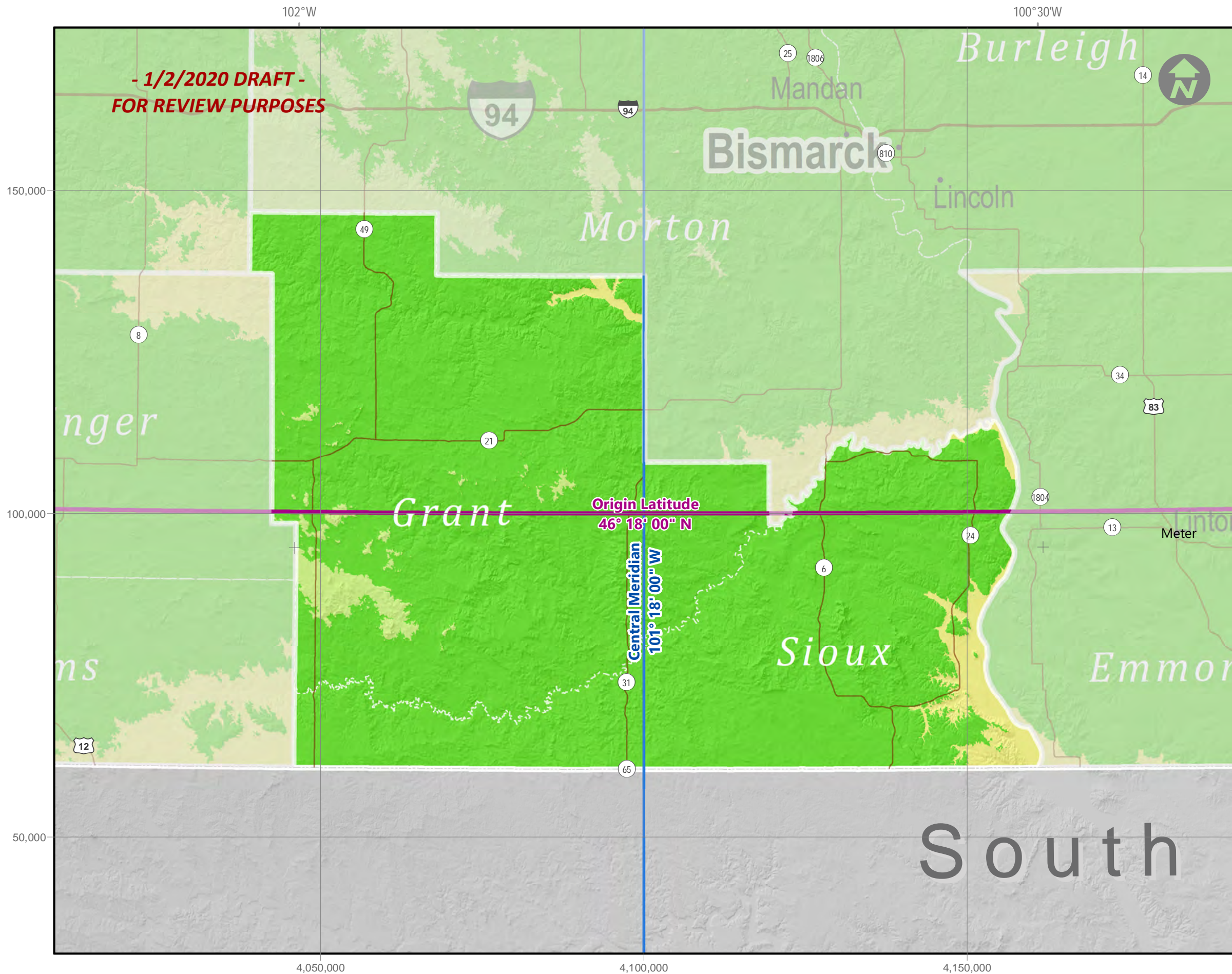
**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 18' N  
Central Meridian: 103° 00' W  
False Northing: 100,000  
False Easting: 3,800,000  
Central Meridian Scale: 1.000 124

Map Scale 1:750,000



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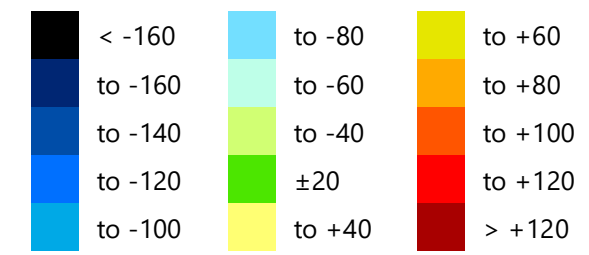


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**North Dakota  
Zone: 13 Cannon Ball**

**Linear Distortion  
at the Topographic Surface  
in parts per million (ppm)**



**Distortion Values for Zone  
in parts per million (ppm)**

**Min:** -34.5    **Range:** 73.4  
**Max:** 38.9    **Mean:** 0.554

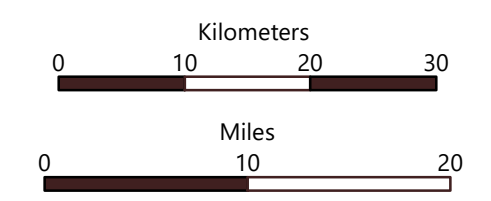
**Area of the zone that is within:**

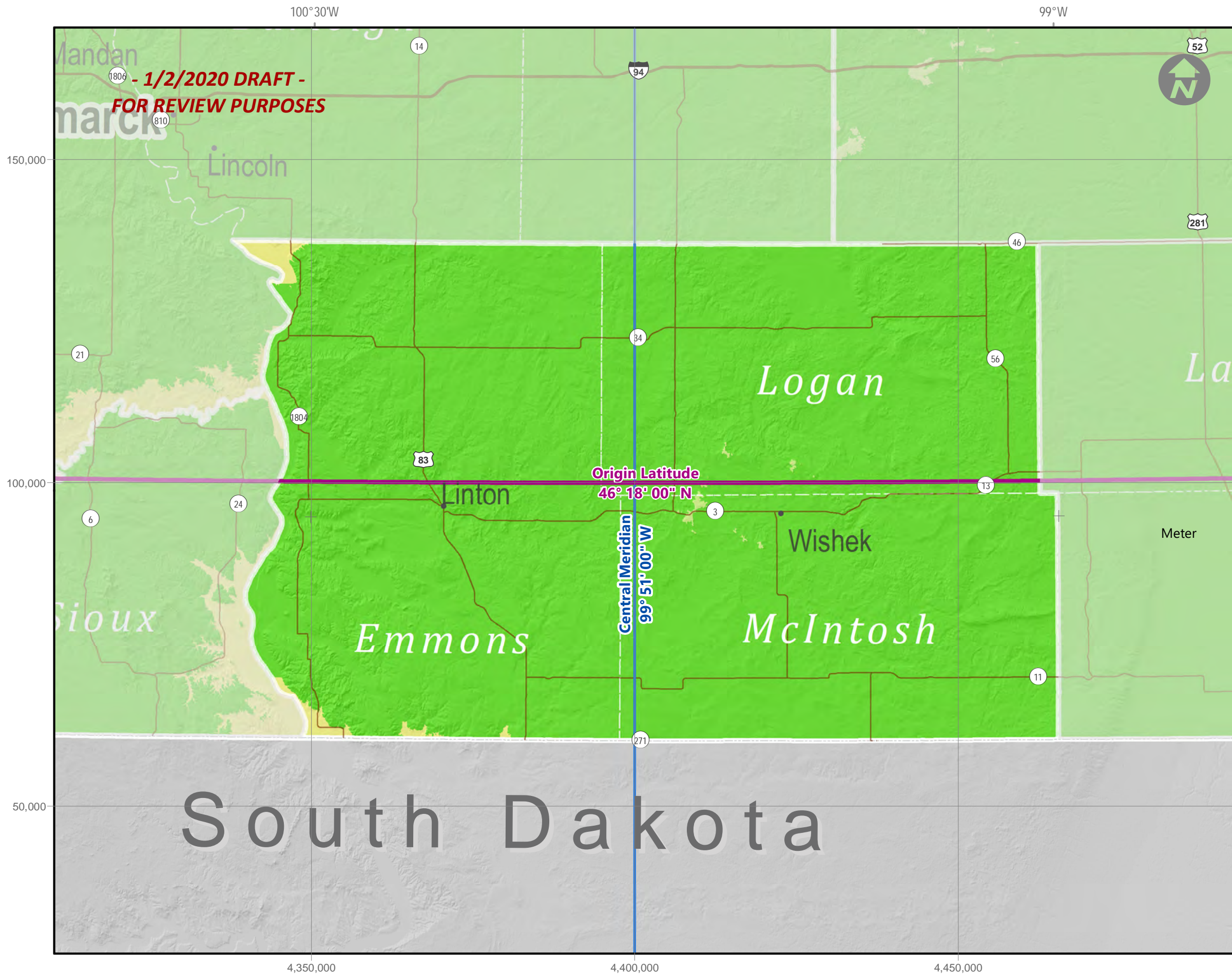
± 10ppm: 56%    ± 25ppm: 98%  
± 20ppm: 95%    ± 30ppm: 99%

**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 18' N  
Central Meridian: 101° 18' W  
False Northing: 100,000  
False Easting: 4,100,000  
Central Meridian Scale: 1.000 093

Map Scale 1:600,000

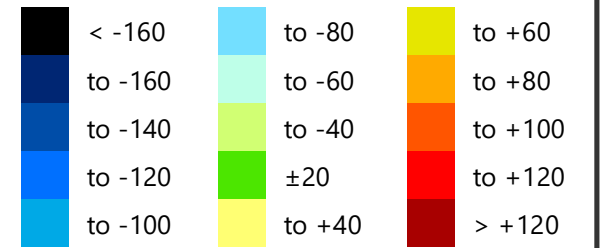




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## North Dakota Zone: 14 Linton

**Linear Distortion  
at the Topographic Surface**  
*in parts per million (ppm)*



**Distortion Values for Zone**  
*in parts per million (ppm)*

**Min:** -22.5    **Range:** 50.4  
**Max:** 27.9    **Mean:** -2.058

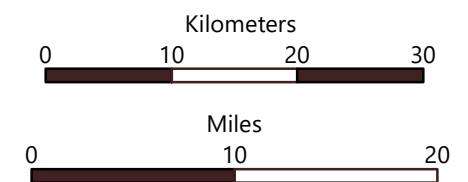
**Area of the zone that is within:**

± 10ppm: 73%    ± 25ppm: 100%  
± 20ppm: 99%    ± 30ppm: 100%

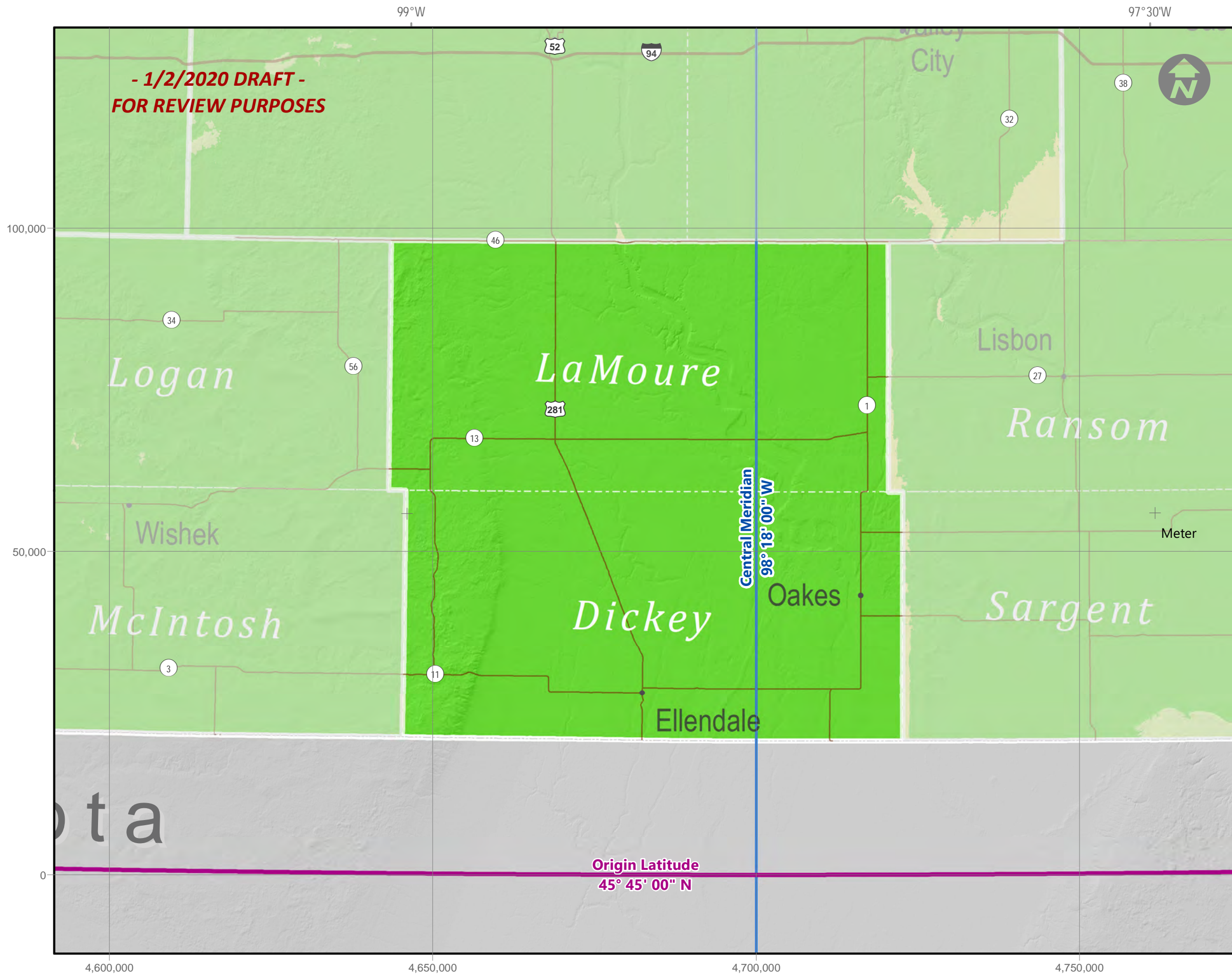
**Lambert Conformal Conic**

Linear Unit: Meter  
Latitude of Grid Origin: 46° 18' N  
Central Meridian: 99° 51' W  
False Northing: 100,000  
False Easting: 4,400,000  
Central Meridian Scale: 1.000 082

Map Scale 1:600,000

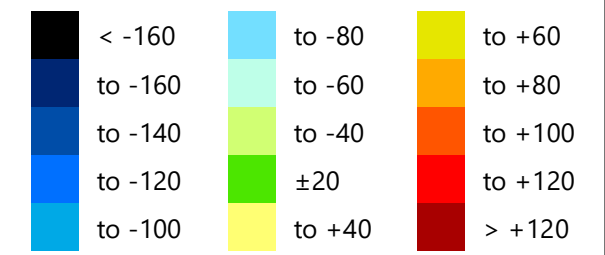


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## North Dakota Zone: 15 Oakes

**Linear Distortion  
at the Topographic Surface**  
in parts per million (ppm)



**Distortion Values for Zone**  
in parts per million (ppm)

**Min:** -14    **Range:** 27.5  
**Max:** 13.6    **Mean:** 0.993

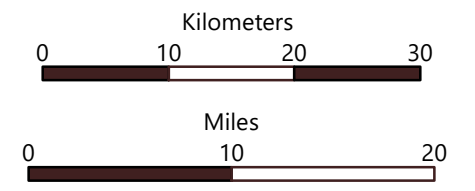
**Area of the zone that is within:**

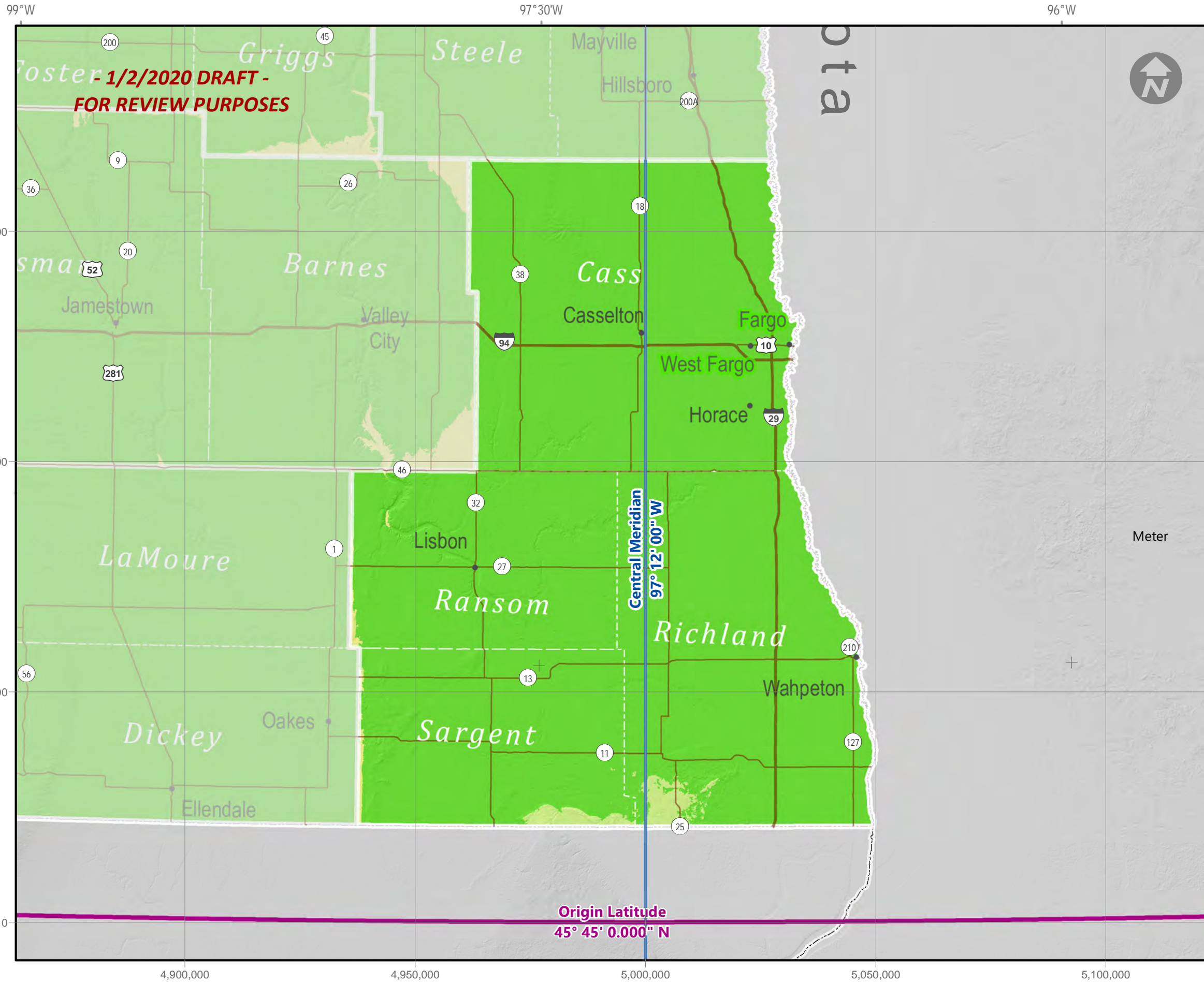
± 10ppm: 99%    ± 25ppm: 100%  
± 20ppm: 100%    ± 30ppm: 100%

### Transverse Mercator

Linear Unit: Meter  
Latitude of Grid Origin: 45° 45' N  
Central Meridian: 98° 18' W  
False Northing: 0  
False Easting: 4,700,000  
Central Meridian Scale: 1.000 061

Map Scale 1:600,000



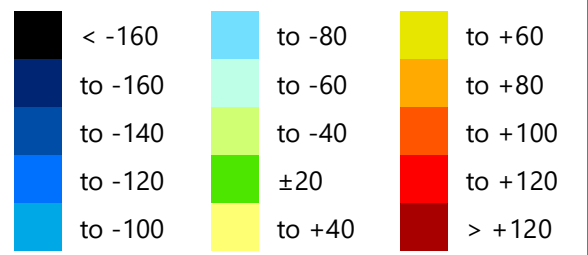


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### North Dakota Zone: 16 Fargo

**Linear Distortion  
at the Topographic Surface  
in parts per million (ppm)**



**Distortion Values for Zone  
in parts per million (ppm)**

**Min:** -40.8     **Range:** 63.7  
**Max:** 22.9     **Mean:** -5.653

**Area of the zone that is within:**

± 10ppm: 57%     ± 25ppm: 100%  
± 20ppm: 98%     ± 30ppm: 100%

**Transverse Mercator**

Linear Unit: Meter  
Latitude of Grid Origin: 45° 45' N  
Central Meridian: 97° 12' W  
False Northing: 0  
False Easting: 5,000,000  
Central Meridian Scale: 1.000 032

Map Scale 1:850,000

