

# GEOLOGIC MAP OF THE WELLS AREA, ELKO COUNTY, NEVADA

Compiled by  
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2011

- Qty Active tributary stream deposits
- Qmy Active medial stream deposits (Town Creek)
- Qf Alluvial fan deposits
- Qs Spring deposits
- Qls Landslide deposits
- Qlo Older alluvial fan deposits

### Oxley Peak Area (Thorman et al., 2003; Thorman and Brooks, this volume)

- Ts Tufaceous sedimentary deposits (middle-upper Miocene)
- Trp Porphyritic rhyolite lava (15 Ma)
- Lacustrine or volcanoclastic sedimentary deposits (Eocene?)
- Tb Tuff of Big Cottonwood Canyon (40.0 Ma)
- Ab Andesite lava (Eocene)
- Tp Plagioclase-biotite tuff (~41 Ma)

### Eastern Facies Units

- Dinwoody (?) Formation (Triassic)
- Pm Murdock Mountain Formation (Permian)
- Mm Melandco sandstone (Mississippian)
- Mlp Tripson Pass Limestone (Mississippian)
- Dg Guilmette Formation (Devonian)
- Sev and Simonson Dolomite (Devonian)

### Western Facies Units

- Ma Argillite, shale, and chert (Mississippian)
- Dsh Shale, limestone, and chert (Devonian)
- Dw Shale, limestone, and chert (Upper Devonian)
- Dsdw Shale, limestone, and chert, undivided (Devonian)
- Dsdwv Shale, limestone, chert, and limestone, undivided (Devonian, Silurian, and Ordovician)

### Western Windermere Hills (Mueller, 1993)

- Ts Tufaceous sedimentary deposits (Miocene)
- Eocene volcanic rocks, undivided

### Gerster Formation (Permian)

- Pp Gerster Formation (Permian)
- Pp Pequoop Formation (Permian)
- Mm Melandco sandstone (Mississippian)
- Mlp Tripson Pass Limestone (Mississippian)
- Dg Guilmette Formation (Devonian)
- Sev and Simonson Dolomite (Devonian)
- Sr Roberts Mountains Formation (Devonian-Silurian)
- Cf Fish Haven Dolomite (Ordovician)
- Ok Eureka Quartzite (Ordovician)
- Op Pogonip Group (Ordovician)

### Metamorphosed Units

- Pem Ely Limestone (Pennsylvanian)
- Mom Diamond Peak Formation (Mississippian)
- Mml Chainman Formation (Mississippian)
- Dgm Guilmette Formation (Devonian)

### Welcome Quadrangle, East Humboldt Range (Snoke et al., 1997)

- Tbc Boulder conglomerate (upper Miocene?)
- Ts Tufaceous sedimentary deposits (Miocene)
- Try Rhyolite lava (13 Ma)
- Tvb Volcanoclastic breccia (Miocene)
- Trp Porphyritic rhyolite lava (Miocene)
- Tro Rhyolite lava (15 Ma)
- Tes Volcanoclastic sedimentary rock and lava (Eocene)
- Tev Eocene volcanic rocks, undivided

### Murdock Mountain and Pequoop Formations (Permian)

- Pp Murdock Mountain and Pequoop Formations (Permian)
- Pp Ely Limestone and Diamond Peak Formation (Carboniferous)
- Dg Guilmette Formation (Devonian)

### Metamorphosed Units

- DCm Metasedimentary rocks (Devonian to Cambrian)
- CZm Metasedimentary rocks (Cambrian to Proterozoic)
- X Metamorphic rocks (Proterozoic and Archean?)

### Northwestern Wood Hills (Thorman, 1970; Camilleri, in press)

- Ts Tufaceous sedimentary deposits (Miocene)
- Volcanoclastic sedimentary rock (Eocene)
- Tb Tuff of Big Cottonwood Canyon (40.0 Ma)

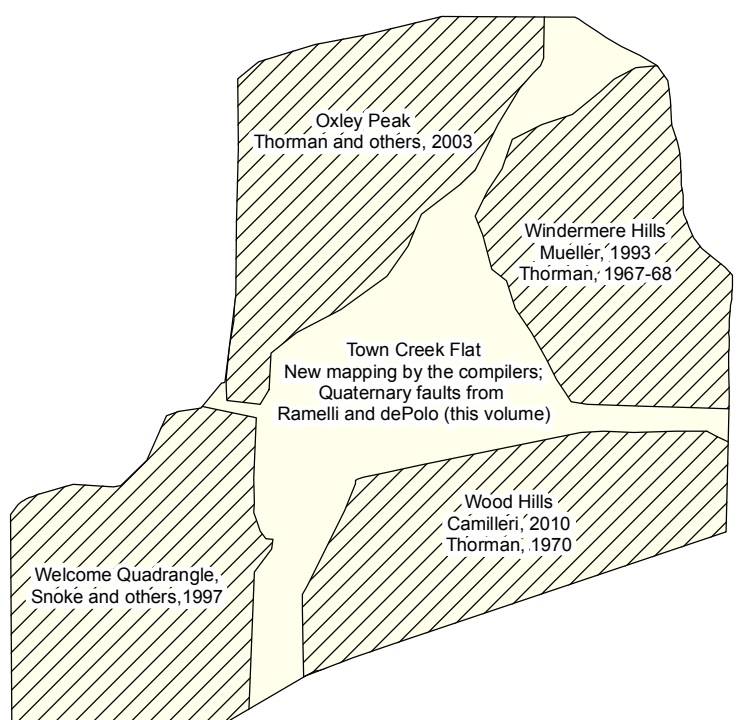
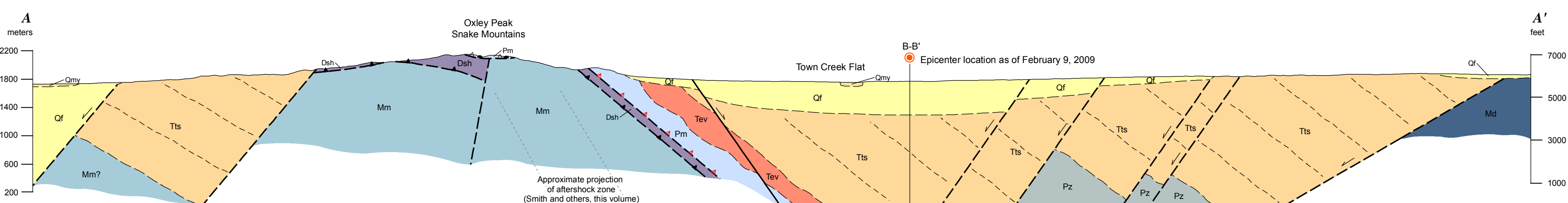
### Plympton Formation (?) (Permian)

- Pf Ferguson Mountain Formation (Permian)
- Ely Limestone (Pennsylvanian)
- Dm Diamond Peak Formation (Mississippian)
- Mc Chainman Formation (Mississippian)
- Mlp Tripson Pass Limestone (Mississippian)
- Dg Guilmette Formation (Devonian)

### Metamorphosed Units

- Dgm Guilmette Formation (Devonian)
- DOu Devonian, Silurian, and Ordovician undivided (Devonian)
- Smn Roberts Mountains Formation (Devonian-Silurian)
- Cam Eureka Quartzite (Ordovician)
- Opn Pogonip Group (Ordovician)
- Opqm Pogonip Group, quartzite (Ordovician)
- CZm Metasedimentary rocks (Cambrian to Proterozoic)

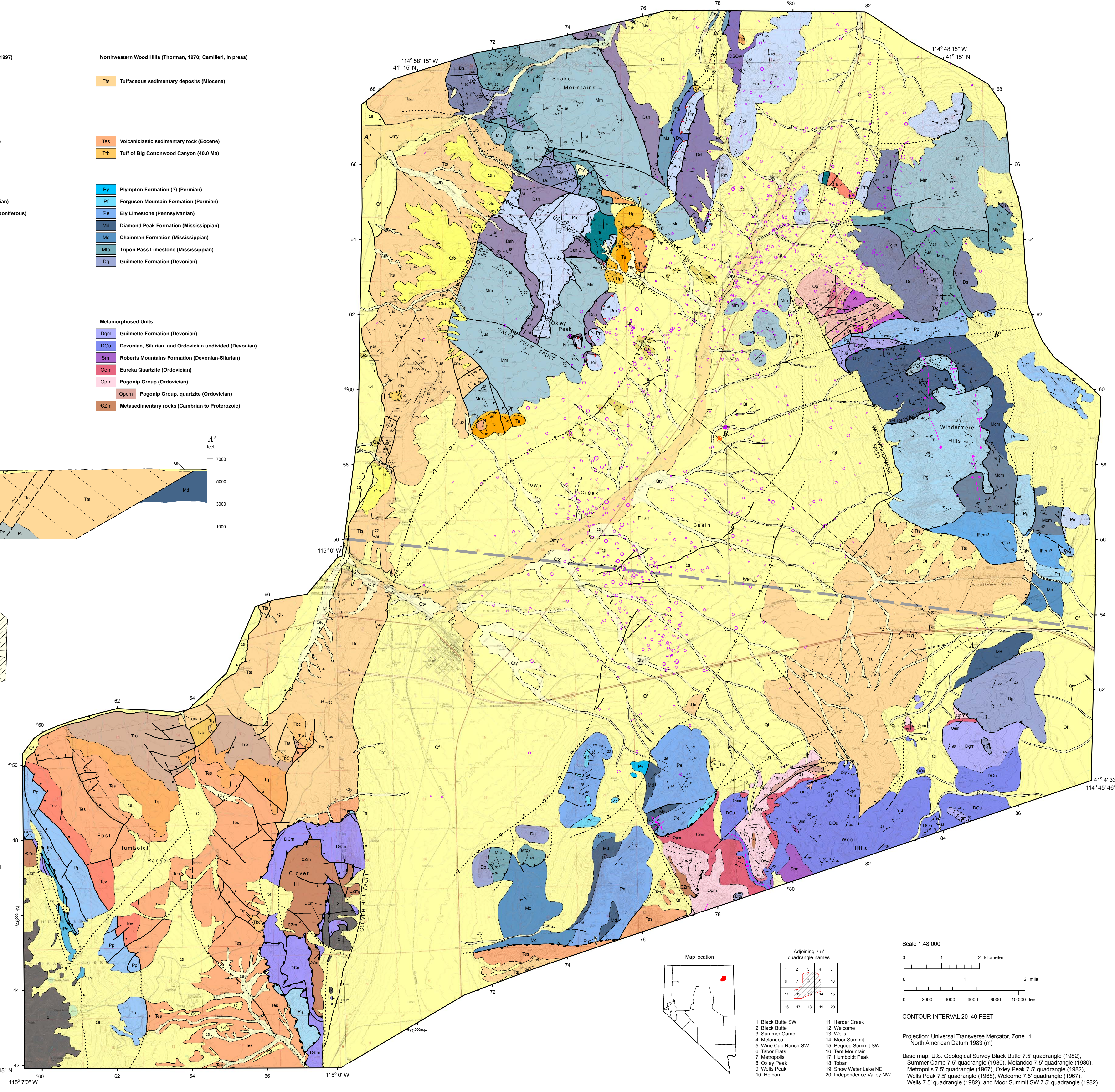
### Pre-Cenozoic rocks, undivided. Cross sections only.



### Symbology (per FGDC-STD-013-2006)

- Contact** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain.
- Internal contact** Solid where certain and location accurate.
- Form line** Short-dashed showing strike of beds on map, and dip of beds in cross section.
- Normal fault** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain. Ball on downthrown side.
- Strike-slip fault** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain. Arrow on one side shows known relative motion, double arrows show unknown relative motion.
- Thrust fault** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain. Solid sawtooth on upper plate.
- Subordinate thrust fault** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain. Hollow red sawtooth on upper plate where interpreted to be bedding-parallel faulted unconformity.
- Low-angle normal fault** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain. Half-circles on upper plate.
- Fault of undetermined nature** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed, queried where uncertain. Half-circles on upper plate. May be low-angle normal fault or thrust fault. See chapter by Thorman and Brooks, this volume for explanation.
- Anticline** Solid where certain and location accurate, long-dashed where approximate. Arrowhead shows direction of plunge.
- Syncline** Solid where certain and location accurate, long-dashed where approximate, dotted where concealed. Arrowhead shows direction of plunge.
- Overturned anticline** Solid where certain and location accurate, long-dashed where approximate, short-dashed where inferred, dotted where concealed.
- Overturned syncline** Solid where certain and location accurate, long-dashed where approximate.
- Strike and dip of bedding** Inclined, Overturned, Vertical
- Strike and dip of compact foliation in ash-flow tuff** Inclined
- Strike and dip of flow banding or flow foliation in volcanic rocks** Inclined
- Strike and dip of metamorphic foliation** Inclined
- Trend and plunge of metamorphic lineation** Arrow

- Epicenter of February 21, 2008 earthquake, magnitude 6.9**
- After shock locations as of February 9, 2009**
- location as of February 4, 2011
- location as of February 9, 2009
- 0.0 to 0.9
- 1.0 to 1.9
- 2.0 to 2.9
- 3.0 to 3.9
- 4.0 to 4.9



**References**

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Map compiled from Camilleri (2010), Mueller (1993), Snoke et al. (1997), Thorman (1970), and Thorman et al. (2003) with new mapping and modification by Christopher D. Henry, Alan B. Ramelli (this volume), and Charles H. Thorman. References in Henry and Colgan (this volume).

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Scale 1:48,000

0 1 2 kilometer

0 1 2 mile

0 2000 4000 6000 8000 10000 feet

CONTOUR INTERVAL 20-40 FEET

Projection: Universal Transverse Mercator, Zone 11, North American Datum 1983 (m)

Base map: U.S. Geological Survey Black Butte 7.5' quadrangle (1982), Metropolis 7.5' quadrangle (1967), Oxley Peak 7.5' quadrangle (1982), Wells Peak 7.5' quadrangle (1968), Welcome 7.5' quadrangle (1967), Wells 7.5' quadrangle (1982), and Moor Summit SW 7.5' quadrangle (1982)

Adjoining 7.5' quadrangle names

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

1 Black Butte SW  
2 Black Butte  
3 Summer Camp  
4 Melandco  
5 Wine Cup Branch SW  
6 Tabor Flats  
7 Metropolis  
8 Oxley Peak  
9 Wells Peak  
10 Huborn  
11 Herder Creek  
12 Welcome  
13 Moor Summit  
14 Moor Summit  
15 Pequoop Branch SW  
16 Tent Mountain  
17 Humboldt Peak  
18 Tobar  
19 Snow Water Lake NE  
20 Independence Valley NW