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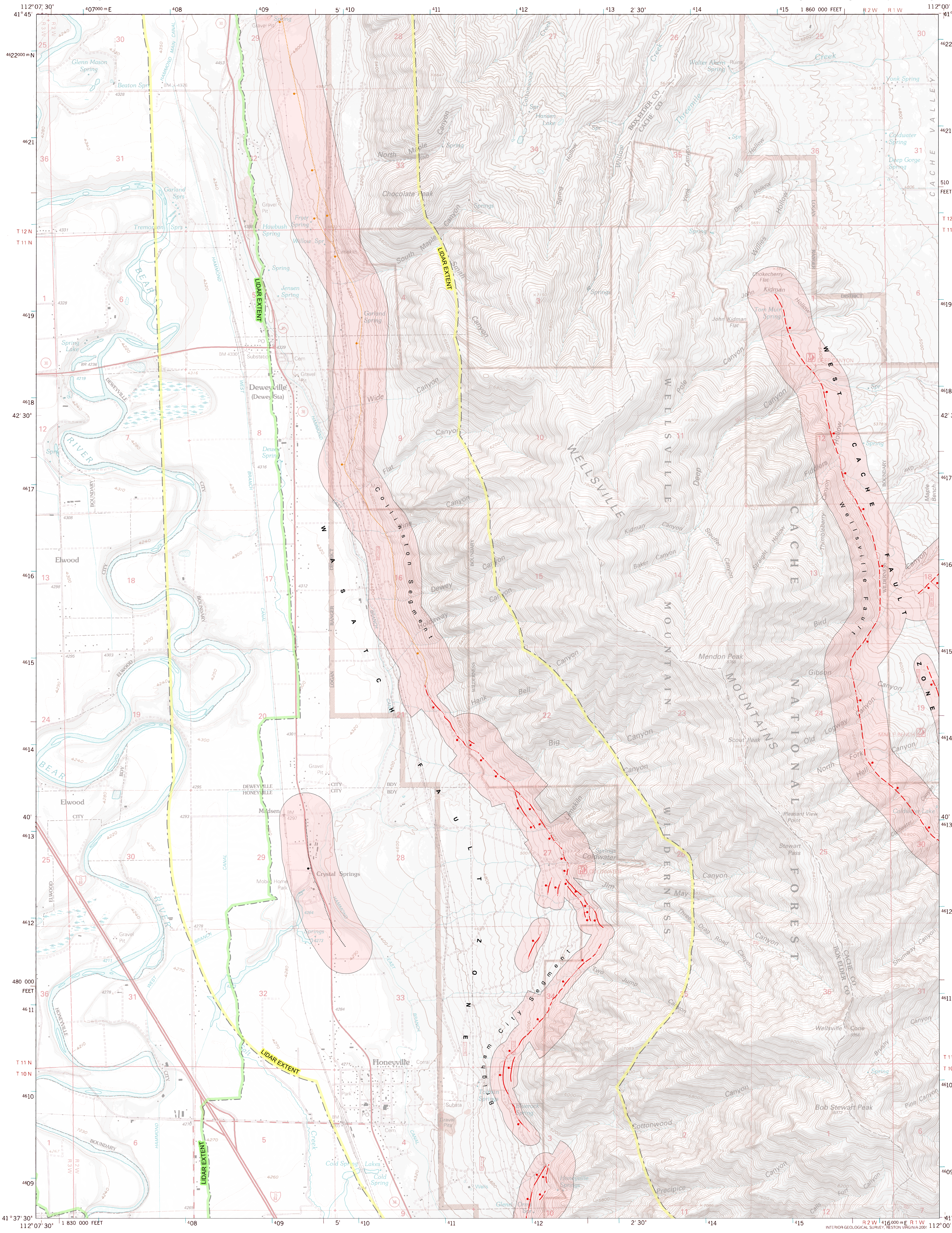

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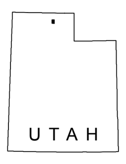
This map is a plot of geographic information system (GIS) files created to visually represent the content of the GIS data files. This preliminary map contains features that do not meet UGS cartographic standards.



QUADRANGLE LOCATION

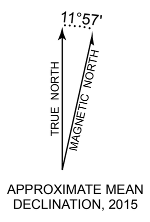
SCALE 1:24,000

1 0.5 0 1 MILE

5000 2500 0 5000 FEET

1 0.5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 10 FEET



APPROXIMATE MEAN DECLINATION, 2015

Base from USGS Honeyville 7.5' Quadrangle (1998)
Projection: UTM Zone 12
Datum: NAD 1927
Shaded topography generated from 10-meter USGS digital elevation data

LiDAR surface fault mapping: Kimm M. Harty and Adam P. McKean
GIS and Cartography: Adam P. McKean

Utah Geological Survey
1594 West North Temple, Suite 3110
P.O. Box 146100, Salt Lake City, UT 84114-6100
(801) 537-3300
geology.utah.gov

This map was created from geographic information system (GIS) data.

SURFACE FAULT RUPTURE HAZARD MAP OF THE HONEYVILLE QUADRANGLE, BOX ELDER AND CACHE COUNTIES, UTAH

by

Kimm M. Harty and Adam P. McKean

2015

1	2	3
4	·	5
6	7	8

1. Riverside
2. Cutler Dam
3. Newton
4. Tremonton
5. Wellsville
6. Bear River City
7. Brigham City
8. Mount Pisgah

ADJOINING 7.5' QUADRANGLE NAMES

EXPLANATION

2013-2014 LiDAR extent – 0.5-meter Wasatch Front bare earth Light Detection and Ranging (LiDAR) elevation data, available from Utah Automated Geographic Reference Center (AGRC) (2013–2014).

2011 LiDAR extent – 1-meter bare earth LiDAR elevation data, available from AGRC (2011).

SURFACE FAULT RUPTURE HAZARD CATEGORIES

Holocene-active fault (movement within the past 11,700 years) or suspected Holocene-active fault: Surface-fault-rupture hazard investigations recommended for all structures intended for human occupancy and all IBC Risk Category IIa, IIb, III, and IV structures (International Code Council, 2012). Ball and bar on downthrown side of fault. Solid line indicates well-defined fault trace, dashed line indicates moderately well-defined fault trace, and dotted line indicates buried or inferred fault trace.

Late Quaternary-active fault (movement within the past 130,000 years) or suspected Late Quaternary-active fault: Surface-fault-rupture hazard investigations recommended for all IBC Risk Category IIb, III, and IV stuctures (International Code Council, 2012). Studies for IBC Risk Category IIa and other structures for human occupancy remain prudent, but should be based on an assessment of whether risk-reduction measures are justified by weighing the probability of occurrence against the risk to lives and potential economic loss. Ball and bar on downthrown side of fault. Solid line indicates well-defined fault trace, dashed line indicates moderately well-defined fault trace, and dotted line indicates buried or inferred fault trace.

Quaternary-active fault (movement within the past 2,600,000 years) or suspected Quaternary-active fault: Surface-fault-rupture hazard investigations recommended for all IBC Risk Category III and IV structures (International Code Council, 2012). Studies for IBC Risk Category IIa and other structures for human occupancy remain prudent because a low likelihood of surface faulting still exists. Ball and bar on downthrown side of fault. Solid line indicates well-defined fault trace, dashed line indicates moderately well-defined fault trace, and dotted line indicates buried or inferred fault trace.

Surface-fault-rupture hazard special-study area: For well-defined faults, special-study area extends 500 feet on the downthrown side and 250 feet on the upthrown side of each fault. For moderately well-defined or buried/inferred faults, special-study area extends 1000 feet on each side of the suspected trace of each fault (Christenson and others, 2003). For small moderately well-defined or buried/inferred faults that are between and on-trend with well-defined faults, and less than 1000 feet in length, the well-defined fault special-study area width is used.

USING THIS MAP

This map shows potentially active faults on the Honeyville quadrangle along which surface faulting may occur. A special-study area is shown around each fault, within which the UGS recommends a site-specific, surface-fault-rupture-hazard investigation be performed prior to development. Site-specific geotechnical/geologic-hazard investigations can resolve uncertainties inherent in the generalized map scale and help ensure safety by identifying the need for fault setbacks. This map is not intended for use at scales other than 1:24,000; it is our opinion that the inventory of potentially active faults shown on this map is likely complete at this scale. However, smaller faults may not have been detected during mapping or are concealed beneath young geologic deposits. Additionally, concealed and moderately well-defined faults by definition lack a clearly identifiable surface trace; therefore, their locations are approximate. Site-specific fault-trenching investigations should be preceded by a careful field evaluation of the site to identify the surface trace of the fault as well as other faults and fault-related features not evident at 1:24,000 scale.

We focused on mapping Wasatch fault zone traces (Collinston and Brigham City segments) and other faults within the LiDAR data extent using 0.5 and 1 meter LiDAR, stereoscopic pairs of black-and-white aerial photographs from the U.S. Department of Agriculture (USDA) Production and Marketing Administration (1953), and black-and-white low-sun-angle aerial photography from the Woodward-Lundgren & Associates Wasatch fault investigation (in Bowman and others, 2009), and previous mapping (Oviatt, 1986; Personius, 1990; Hylland, 2007). Fault traces outside of the LiDAR extent are from the *Quaternary Fault and Fold Database and Map of Utah* (Black and others, 2003), but were digitized from the original geologic mapping (Solomon, 1999). Bedrock faults with no documented Quaternary movement were not included, but could represent an unlikely source of surface fault rupture hazard. LiDAR-derived fault traces were mapped at 1:10,000 scale; however, all traces are shown on this map at 1:24,000 scale. Jim May and Coldwater Canyons mark the approximate boundary of the Brigham City–Collinston segments of the Wasatch fault zone based on changes in fault trend and offset of similar-age deposits (Personius, 1990).

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