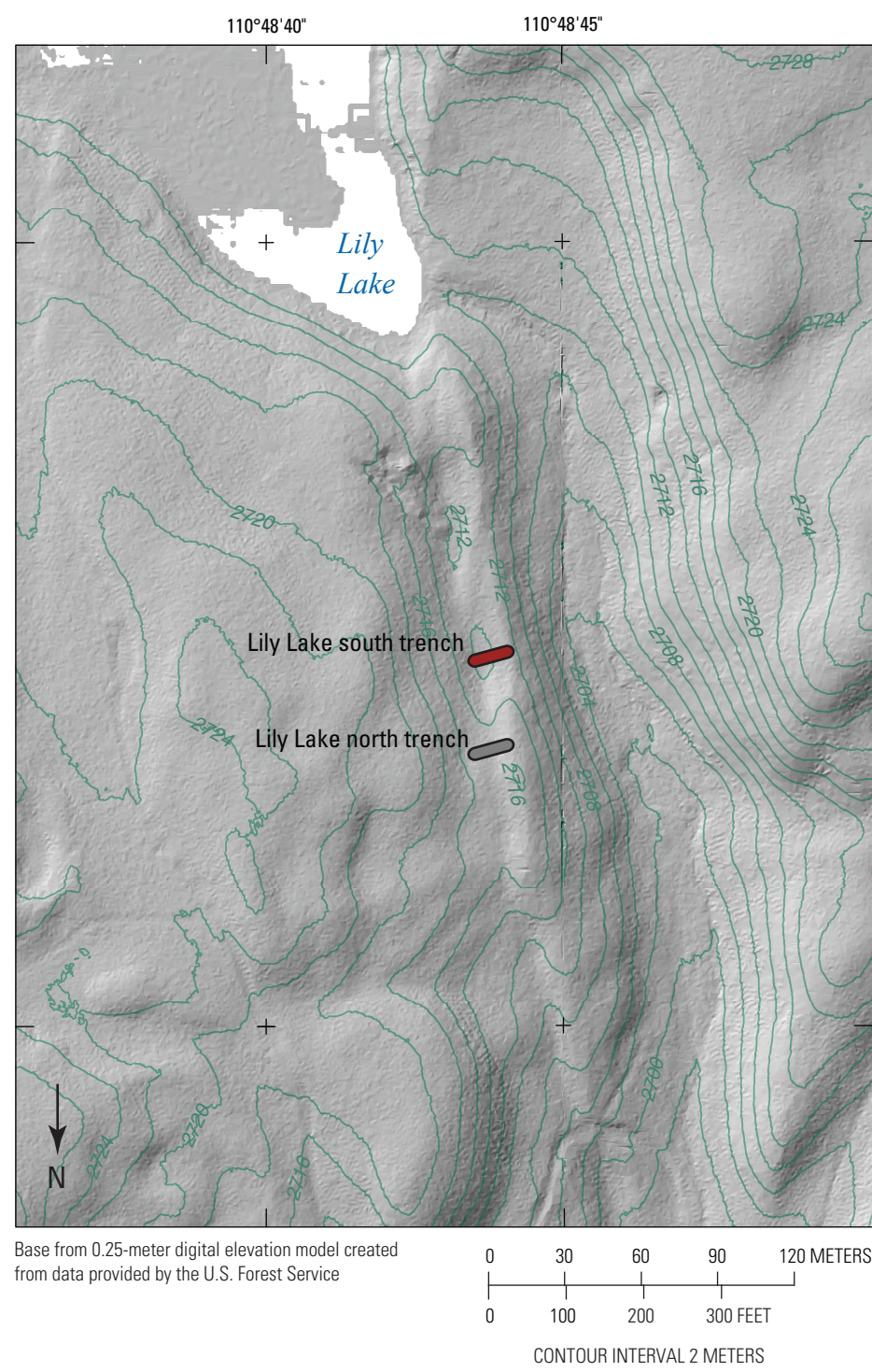


Topographic profile across the fold scarp (expressed as a bench) at the Lily Lake south trench (extracted from 0.25-m digital elevation model). The profile is shown in relation to the top of glaciofluvial deposits (3gf) observed in the trench and inferred beyond the trench (short-dashed line that merges with ground surface). Faulting observed in the trench accounts for ~1 m of the ~6.5 m of vertical separation estimated by projecting the far-field hillslopes; the remaining separation is accommodated by folding. Vertical throw is uncertain but is less than the vertical separation across the fold scarp.



Light detection and ranging (lidar) shaded-relief orthomosaic (with southeast illumination; south is to the top) showing location of the Lily Lake north (lat 40°52.857' N, long 110°48.731' W, not tagged) and Lily Lake south (lat 40°52.837' N, long 110°48.731' W) trenches across the antithetic, east-facing fold scarp in Utah. See figure 1 of pamphlet for regional context.



DESCRIPTION OF TRENCH UNITS

1df **Depression-fill deposits (earthquake event 2 evidence)**—Poorly stratified silt loam with coarse sand and scattered gravel; charcoal rich

2tf **Trough-fill sediment sequence, undifferentiated (earthquake event 3 evidence)**—Includes mass-wasting (2tfm) and alluvial (2fa) deposits; facies vary vertically and laterally

2fm **Mass-wasting facies**—Mainly gravely to very gravely coarse sandy loam; massive, poorly sorted and matrix supported

2fa **Alluvial facies**—Mainly gravely to very gravely coarse sandy loam; moderately stratified, moderately sorted and clast supported

3gf **Glaciofluvial deposits (late Pleistocene Pinedale glaciation)**—Folded and extensively sheared, sandy loam with red, clayey interbeds underlying poorly stratified coarse sandy loam and overlying poorly stratified, moderately sorted, very gravely sandy loam (at base of trench)

EXPLANATION OF TRENCH SYMBOLS

Krotovina—Queried where uncertain

Contact—Solid where accurately located, dashed where approximately located, queried where uncertain

Internal contact—Accurately located

Internal contact—Approximately located, queried where uncertain

Soil horizon boundary

Top of buried O horizon (organic mat)

Base of A horizon developed in underlying unit—Locally also forms the base of buried O horizon (at meter 5–6)

Fault—Solid where accurately located, dashed where approximately located, queried where uncertain. Arrows indicate direction of relative movement

Fissure boundary

Dated sample—All ages are 2-sigma ranges rounded to nearest decade; radiocarbon calibration from Stuiver and others (2017). Probabilities are shown for multimodal ranges from calibration of radiocarbon ages

Radiocarbon-dated charcoal sample with calibrated age—Sample number and age shown

Undated charcoal sample—Sample number shown

Radiocarbon-dated pine tree litter with calibrated age—Sample number and age shown

Sediment sample with optically stimulated luminescence (OSL) age—Sample number and age shown

String grid placed during trenching

Grid-node tag placed during trenching

Trench grid—Horizontal and vertical distances denoted in meters (arbitrary reference frame). Interval is 1 meter

Lily Lake South Trench—South Wall Photomosaic and Site Geomorphology, Bear River Fault Zone, Utah

By

Suzanne Hecker,¹ Christopher B. DuRoss,² David P. Schwartz,¹ Francesca R. Cinti,³ Riccardo Civico,³ William R. Lund,²

Adam I. Hiscock,² Michael W. West,⁴ Tarka Wilcox,⁴ and Alivia R. Stoller¹

2019

¹U.S. Geological Survey
²U.S. Geological Survey
³Istituto Nazionale di Geofisica e Vulcanologia
⁴Michael W. West and Associates, Inc.

ISSN 1528-1528 (online)
<https://doi.org/10.3133/sim3430>

Editing and cartographic design by Monica Edman
Manuscript approved for publication March 6, 2019
Any use of trade, product, or firm names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government.
This map or plate is offered as an online-only, digital publication. Users should be aware that, because of differences in rendering processes and pixel resolution, some slight distortion of scale may occur when viewing this on a computer screen or when printing on an electronic device, even when it is viewed or printed at its intended publication scale.
Digital files available at <https://doi.org/10.3133/sim3430>
Suggested citation: Hecker, S., DuRoss, C.B., Schwartz, D.P., Cinti, F.R., Civico, R., Lund, W.R., Hiscock, A.I., West, M.W., Wilcox, T., and Stoller, A.R., 2019, Stratigraphic and structural relations in trench exposures and geomorphology on the Big Horn, Lily Lake, and Lander Ranch sites, Bear River Fault Zone, Utah and Wyoming, U.S. Geological Survey Scientific Investigations Map 3430, 8 p., 3 sheets, <https://doi.org/10.3133/sim3430>.