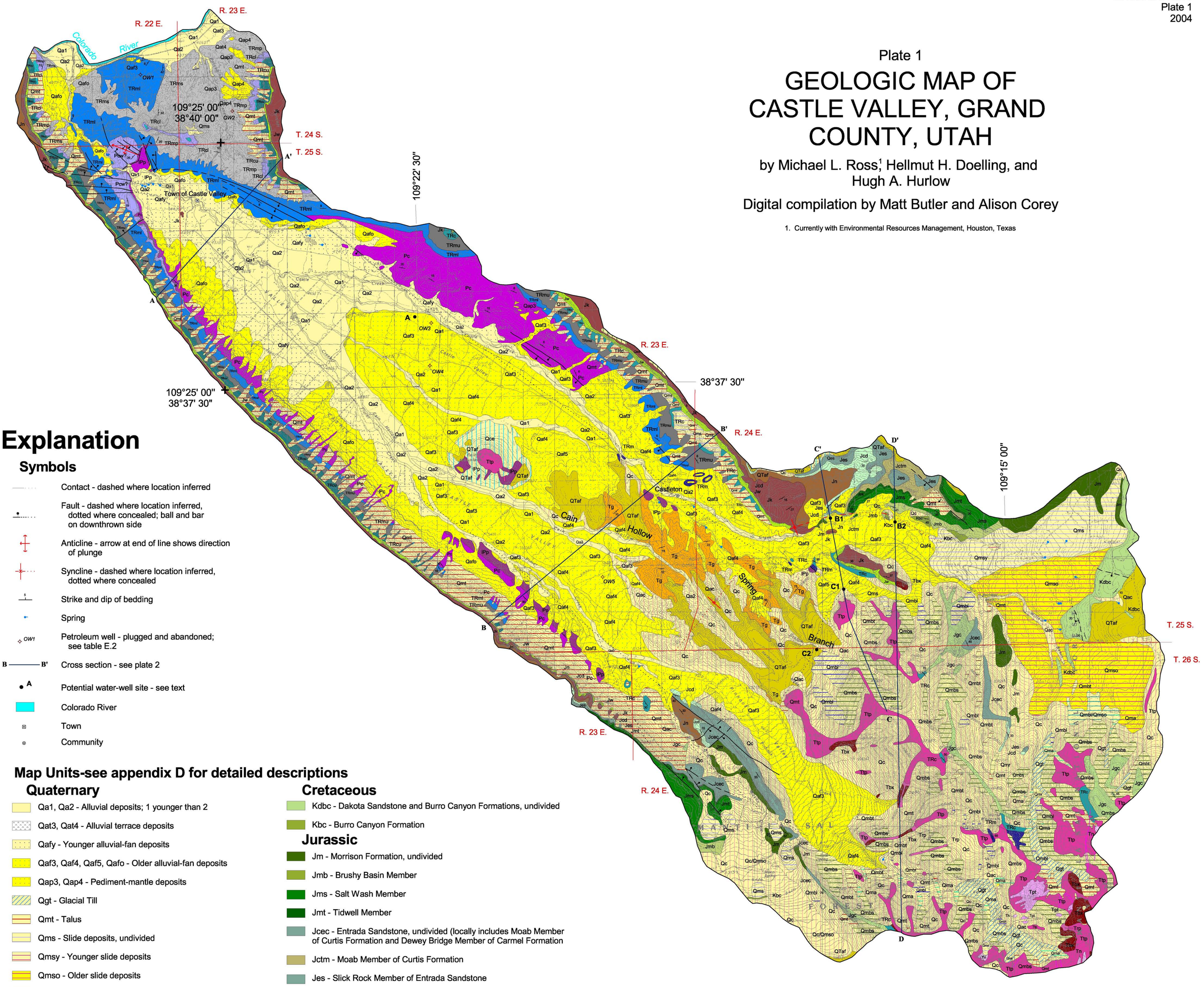
Plate 1

GEOLOGIC MAP OF CASTLE VALLEY, GRAND COUNTY, UTAH

by Michael L. Ross[1], Hellmut H. Doelling, and Hugh A. Hurlow

Digital compilation by Matt Butler and Alison Corey

1. Currently with Environmental Resources Management, Houston, Texas



Explanation

Symbols

- Contact - dashed where location inferred
- Fault - dashed where location inferred, dotted where concealed; ball and bar on downthrown side
- Anticline - arrow at end of line shows direction of plunge
- Syncline - dashed where location inferred, dotted where concealed
- Strike and dip of bedding
- Spring
- OW1 Petroleum well - plugged and abandoned; see table E.2
- B——B' Cross section - see plate 2
- A Potential water-well site - see text
- Colorado River
- Town
- Community

Map Units-see appendix D for detailed descriptions

Quaternary

- Qa1, Qa2 - Alluvial deposits; 1 younger than 2
- Qat3, Qat4 - Alluvial terrace deposits
- Qafy - Younger alluvial-fan deposits
- Qaf3, Qaf4, Qaf5, Qafo - Older alluvial-fan deposits
- Qap3, Qap4 - Pediment-mantle deposits
- Qgt - Glacial Till
- Qmt - Talus
- Qms - Slide deposits, undivided
- Qmsy - Younger slide deposits
- Qmso - Older slide deposits
- Qmbl - Block-slope lateral-spread deposits
- Qmbl/Qmso - Block-slope lateral-spread deposits on older slide deposits
- Qmbs - Block-slope slide deposits
- Qmbt - Block-slope talus deposits
- Qma - Rock-avalanche deposits
- Qmr - Rock-glacier deposits
- Qc - Colluvial deposits Qc/Qmso - colluvial deposits over older slide deposits
- Qce - Colluvial and eolian deposits
- Qes - Eolian sand
- Qac - Alluvial and colluvial deposits

Quaternary-Tertiary

- QTaf - Alluvial-fan deposits

Tertiary

- Tg - Geyser Creek Fanglomerate
- Tbx - Breccia
- Trp - Peralkaline rhyolite dikes
- Tpt - Peralkaline trachyte
- Tn - Nosean trachyte dikes
- Th - Hornblende-plagioclase trachyte
- Ttp - Quartz-plagioclase trachyte

Cretaceous

- Kdbc - Dakota Sandstone and Burro Canyon Formations, undivided
- Kbc - Burro Canyon Formation

Jurassic

- Jm - Morrison Formation, undivided
- Jmb - Brushy Basin Member
- Jms - Salt Wash Member
- Jmt - Tidwell Member
- Jcec - Entrada Sandstone, undivided (locally includes Moab Member of Curtis Formation and Dewey Bridge Member of Carmel Formation
- Jctm - Moab Member of Curtis Formation
- Jes - Slick Rock Member of Entrada Sandstone
- Jcd - Dewey Bridge Member of Carmel Formation
- Jgc - Glen Canyon Group, undivided (includes Navajo, Kayenta, and Wingate Formations)
- Jn - Navajo Sandstone
- Jk - Kayenta Formation
- Jw - Wingate Sandstone

Triassic

- TRc - Chinle Formation, undivided
- TRcu - Upper member
- TRcl - Lower member
- TRm - Moenkopi Formation, undivided
- TRmu - Parriott and Sewemup Members, undivided
- TRmp - Parriott Member
- TRms - Sewemup member
- TRml - Lower member

Permian

Cutler Formation

- Pcw? - White Rim Sandstone Member?
- Pc - Arkosic sandstone member

Pennsylvanian

- IPp - Paradox Formation

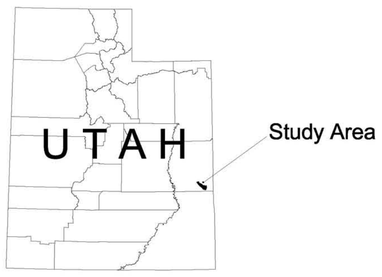
N

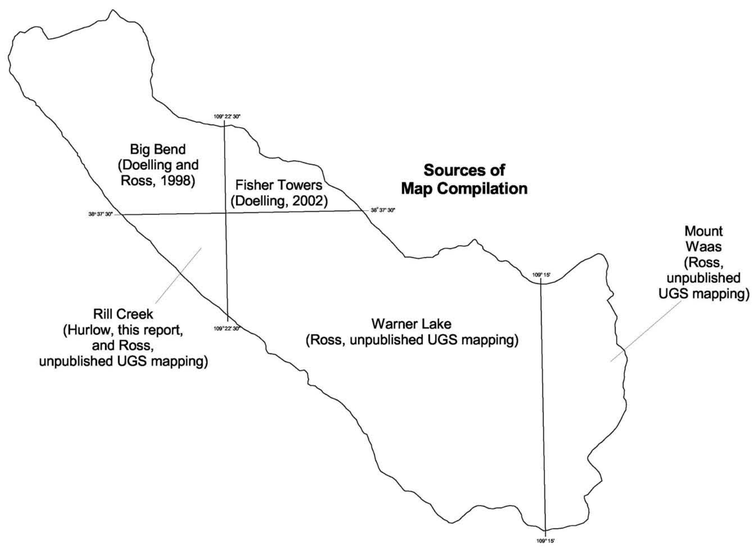
Map Scale: 1:30,000

Contour Interval 40 Feet

0 1 1.5 2 Miles

0 1 1.5 2 Kilometers





Base map from U.S. Geological Survey Big Bend, Fisher Towers, Mount Waas, Rill Creek, and Warner Lake 7-1/2 minute quadrangles.

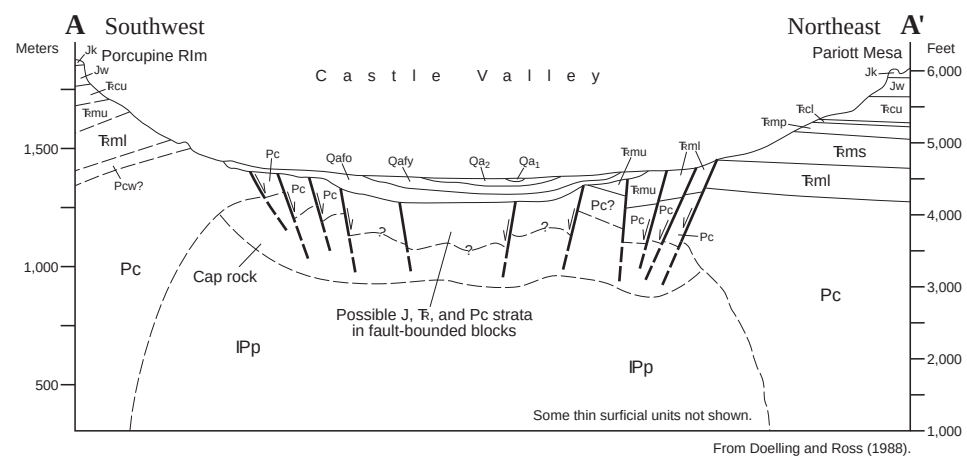
Projection: UTM Zone 12
Units: Meters
Datum: 1927 North American
Spheroid: Clarke 1866

UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources

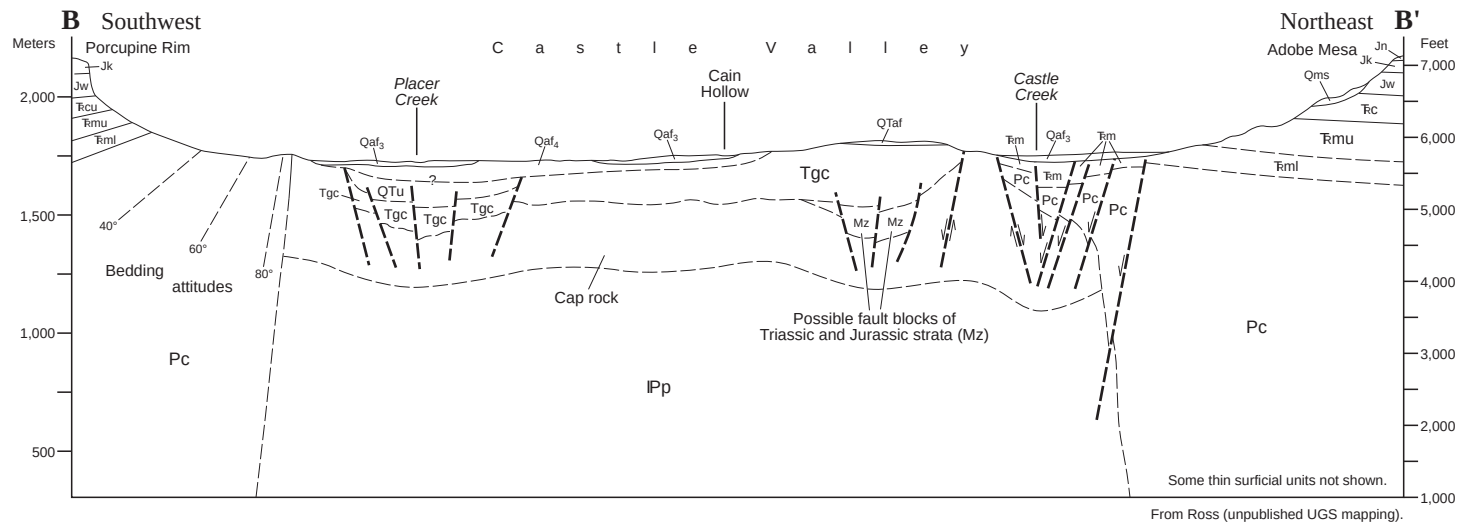
Cross Sections

by
Michael L. Ross, Hellmut H. Doelling, and Hugh A. Hurlow

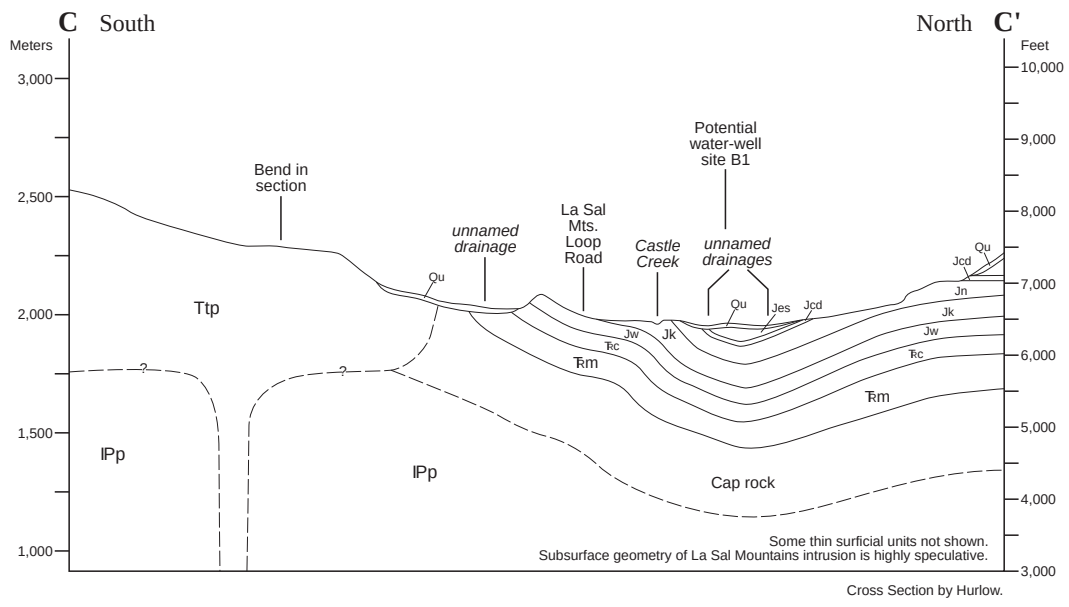
See plates 1 and 3 for locations, and appendix D for descriptions of units



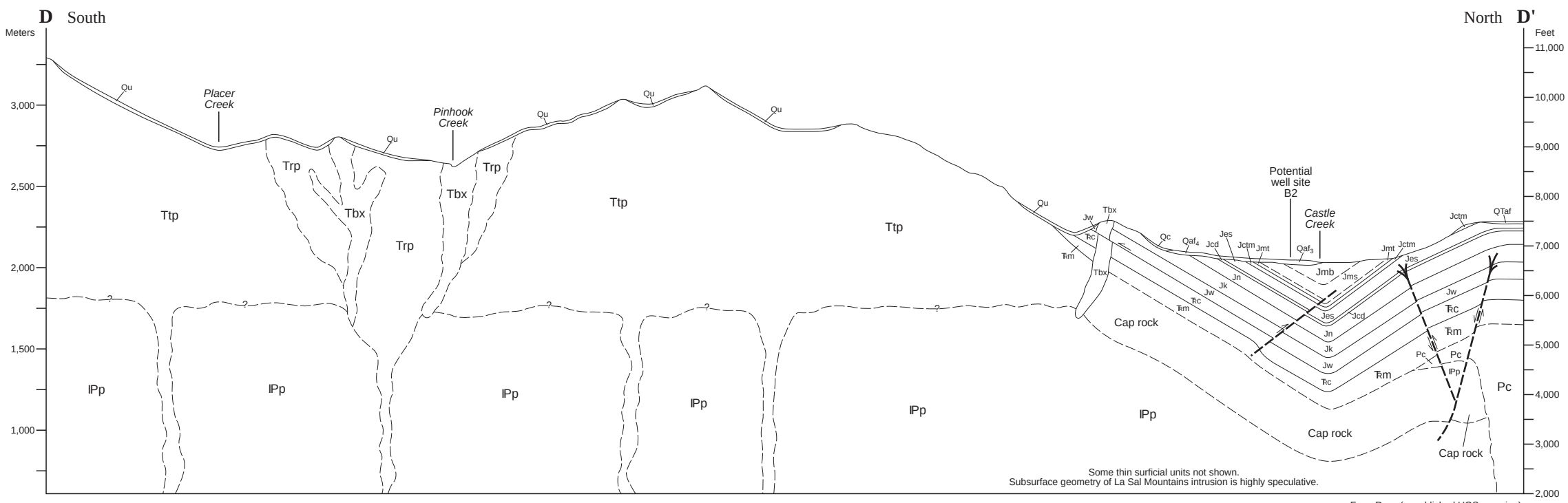
From Doelling and Ross (1988).



From Ross (unpublished UGS mapping).



Cross Section by Hurlow.



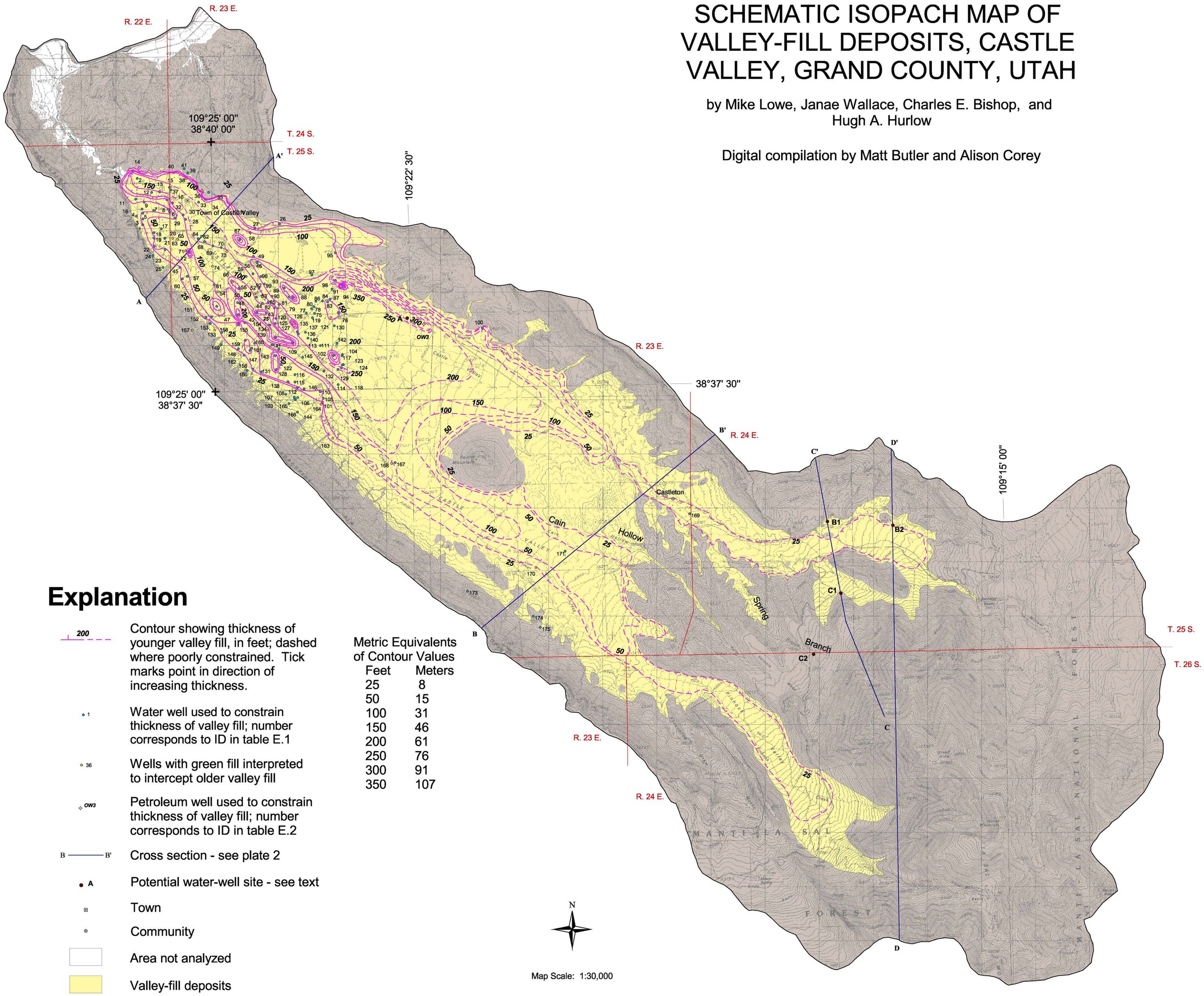
From Ross (unpublished UGS mapping).

Plate 3

SCHEMATIC ISOPACH MAP OF VALLEY-FILL DEPOSITS, CASTLE VALLEY, GRAND COUNTY, UTAH

by Mike Lowe, Janae Wallace, Charles E. Bishop, and Hugh A. Hurlow

Digital compilation by Matt Butler and Alison Corey



Explanation

200	Contour showing thickness of younger valley fill, in feet; dashed where poorly constrained. Tick marks point in direction of increasing thickness.
1	Water well used to constrain thickness of valley fill; number corresponds to ID in table E.1
36	Wells with green fill interpreted to intercept older valley fill
OW3	Petroleum well used to constrain thickness of valley fill; number corresponds to ID in table E.2
B ——— B'	Cross section - see plate 2
A	Potential water-well site - see text
	Town
	Community
	Area not analyzed
	Valley-fill deposits
	Bedrock and thin surficial deposits (not analyzed)

Metric Equivalents of Contour Values

Feet	Meters
25	8
50	15
100	31
150	46
200	61
250	76
300	91
350	107

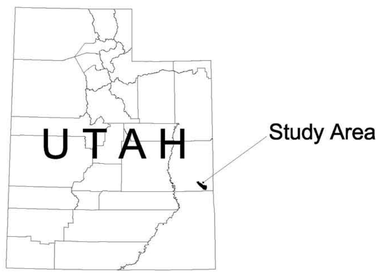
N

Map Scale: 1:30,000

Contour Interval 40 Feet

0 1 1.5 2 Miles

0 1 1.5 2 Kilometers



Base map from U.S. Geological Survey Big Bend, Fisher Towers, Mount Waas, Rill Creek, and Warner Lake 7-1/2 minute quadrangles.

Projection: UTM Zone 12
Units: Meters
Datum: 1927 North American
Spheroid: Clarke 1866

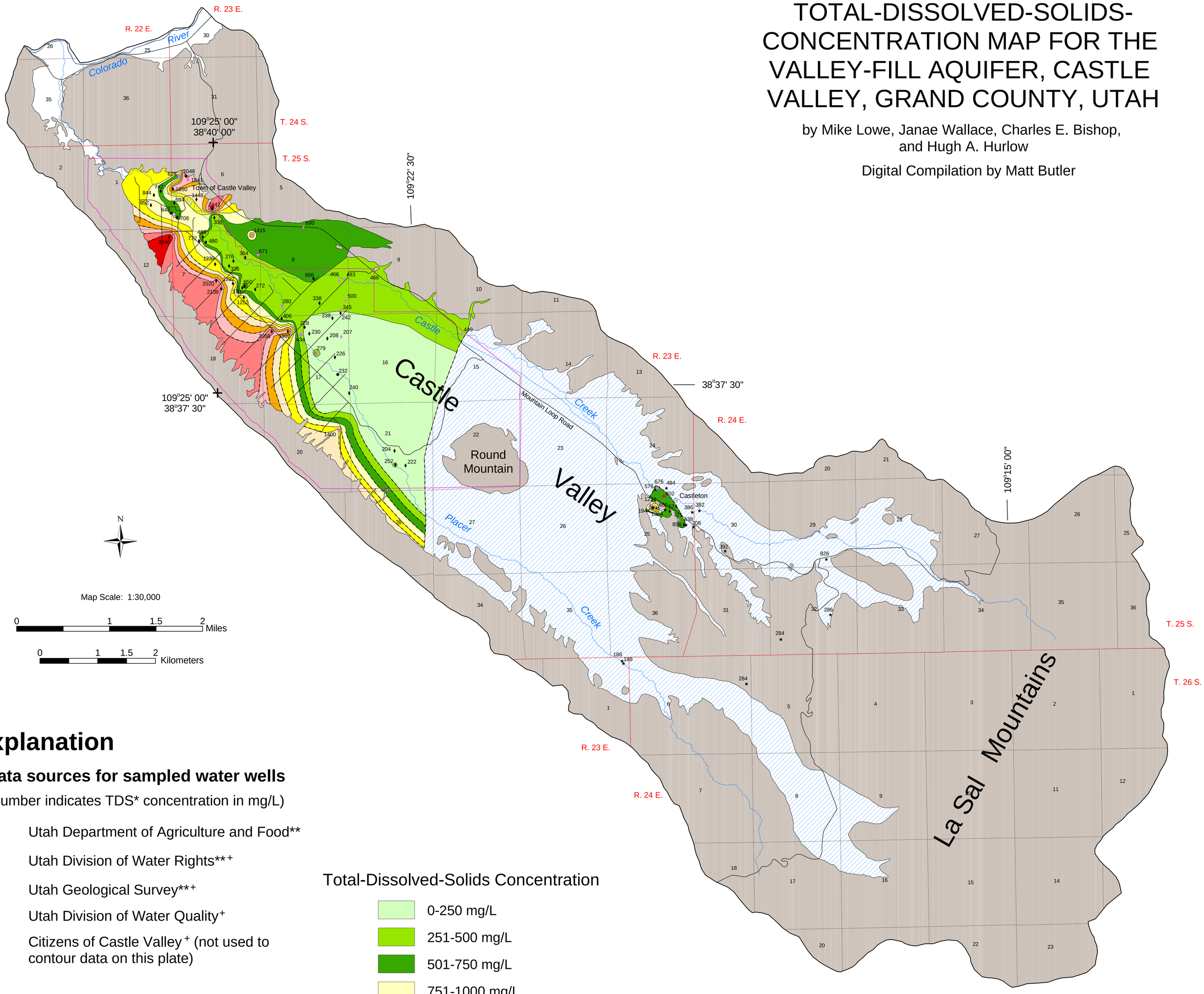
UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources

Plate 4

TOTAL-DISSOLVED-SOLIDS-CONCENTRATION MAP FOR THE VALLEY-FILL AQUIFER, CASTLE VALLEY, GRAND COUNTY, UTAH

by Mike Lowe, Janae Wallace, Charles E. Bishop, and Hugh A. Hurlow

Digital Compilation by Matt Butler



Explanation

Data sources for sampled water wells

(Number indicates TDS* concentration in mg/L)

- Utah Department of Agriculture and Food**
- Utah Division of Water Rights**+
- Utah Geological Survey**+
- Utah Division of Water Quality+
- Citizens of Castle Valley+ (not used to contour data on this plate)

* Total dissolved solids

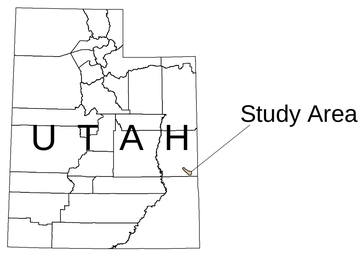
** Data shown in purple are converted specific conductance data

\+ Analysis by the Utah Department of Epidemiology and Laboratory Services

- Line of equal concentration of dissolved solids - dashed where uncertain
- Study-area boundary
- Municipal boundary
- Road
- Water course
- Town
- Community

Total-Dissolved-Solids Concentration

- 0-250 mg/L
- 251-500 mg/L
- 501-750 mg/L
- 751-1000 mg/L
- 1001-1250 mg/L
- 1251-1500 mg/L
- 1501-1750 mg/L
- 1751-2000 mg/L
- 2001-2250 mg/L
- 2251-2500 mg/L
- No data
- Bedrock (not analyzed)
- Area not analyzed



Projection: UTM Zone 12
Units: Meters
Datum: NAD27
Spheroid: Clarke 1866

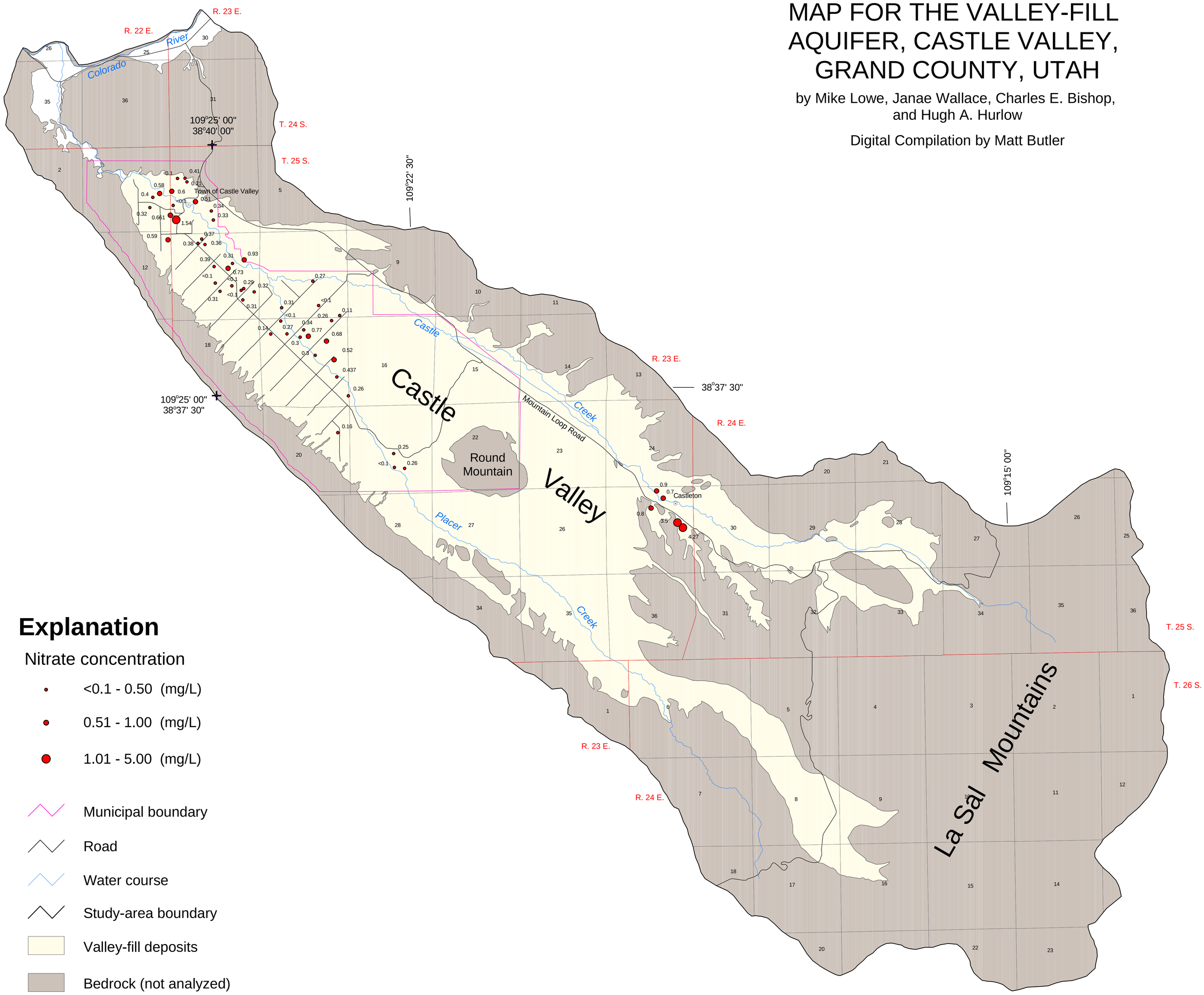
UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources

Plate 5

NITRATE CONCENTRATION MAP FOR THE VALLEY-FILL AQUIFER, CASTLE VALLEY, GRAND COUNTY, UTAH

by Mike Lowe, Janae Wallace, Charles E. Bishop, and Hugh A. Hurlow

Digital Compilation by Matt Butler

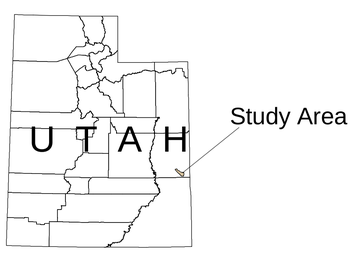


Explanation

Nitrate concentration

- <0.1 - 0.50 (mg/L)
- 0.51 - 1.00 (mg/L)
- 1.01 - 5.00 (mg/L)

- Municipal boundary
- Road
- Water course
- Study-area boundary
- Valley-fill deposits
- Bedrock (not analyzed)
- Area not analyzed
- Town
- Community



N

Map Scale: 1:30,000

0 1 1.5 2 Miles

0 1 1.5 2 Kilometers

Projection: UTM Zone 12
Units: Meters
Datum: NAD27
Spheroid: Clarke 1866

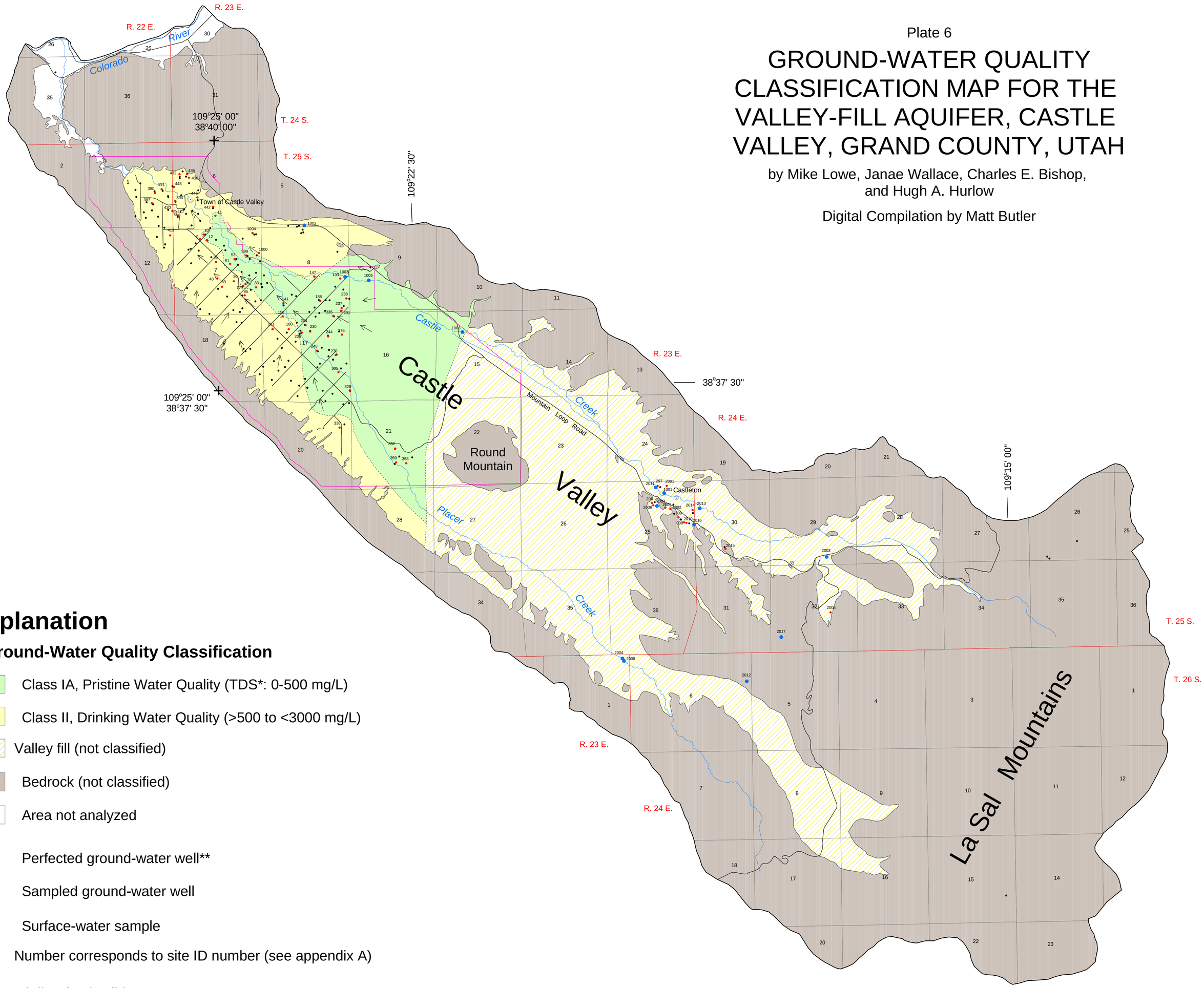
UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources

Plate 6

GROUND-WATER QUALITY CLASSIFICATION MAP FOR THE VALLEY-FILL AQUIFER, CASTLE VALLEY, GRAND COUNTY, UTAH

by Mike Lowe, Janae Wallace, Charles E. Bishop, and Hugh A. Hurlow

Digital Compilation by Matt Butler



Explanation

Ground-Water Quality Classification

- Class IA, Pristine Water Quality (TDS*: 0-500 mg/L)
- Class II, Drinking Water Quality (>500 to <3000 mg/L)
- Valley fill (not classified)
- Bedrock (not classified)
- Area not analyzed

- Perfected ground-water well**
- Sampled ground-water well
- Surface-water sample
- 328 Number corresponds to site ID number (see appendix A)

* Total dissolved solids

** All wells are listed in Utah Division of Water Rights database

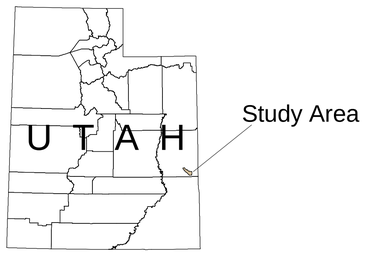
- Ground-water quality class boundary
- Valley-fill deposits boundary
- Study-area boundary
- Municipal boundary
- Road
- Water course
- Ground-water flow direction (from Snyder, 1996)
- Town
- Community

N

Map Scale: 1:30,000

0 1 1.5 2 Miles

0 1 1.5 2 Kilometers



Projection: UTM Zone 12
Units: Meters
Datum: NAD27
Spheroid: Clarke 1866

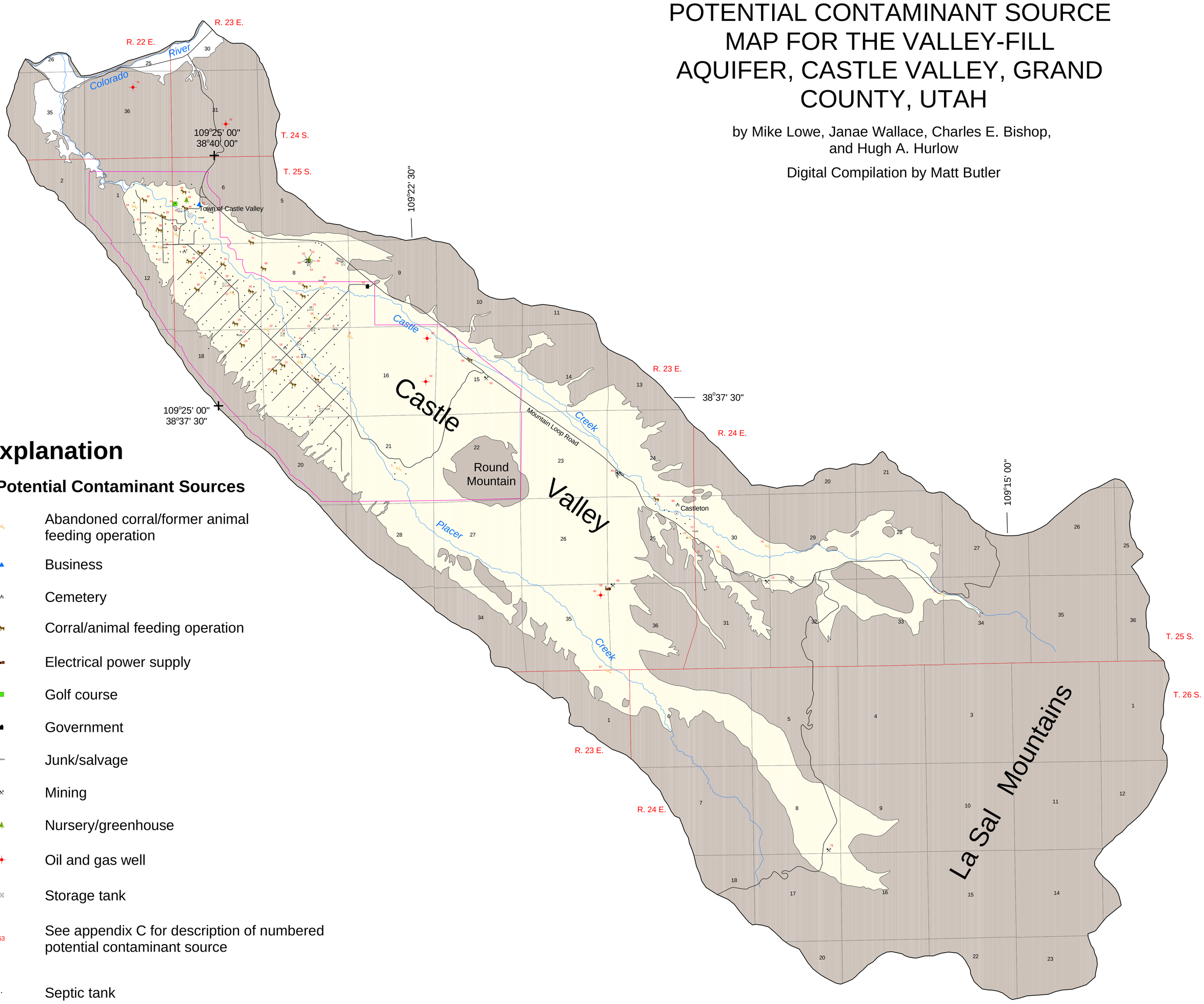
UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources

Plate 7

POTENTIAL CONTAMINANT SOURCE MAP FOR THE VALLEY-FILL AQUIFER, CASTLE VALLEY, GRAND COUNTY, UTAH

by Mike Lowe, Janae Wallace, Charles E. Bishop, and Hugh A. Hurlow

Digital Compilation by Matt Butler



Explanation

Potential Contaminant Sources

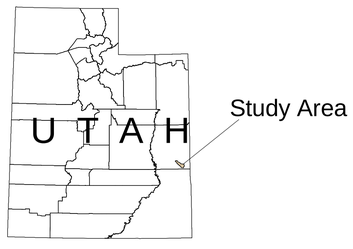
- Abandoned corral/former animal feeding operation
- Business
- Cemetery
- Corral/animal feeding operation
- Electrical power supply
- Golf course
- Government
- Junk/salvage
- Mining
- Nursery/greenhouse
- Oil and gas well
- Storage tank
- 53 See appendix C for description of numbered potential contaminant source
- Septic tank
- Municipal boundary
- Road
- Water course
- Study-area boundary
- Valley-fill deposits
- Bedrock (not surveyed)
- Area not surveyed
- Town (Castle Valley)
- Community

N

Map Scale: 1:30,000

0 1 1.5 2 Miles

0 1 1.5 2 Kilometers



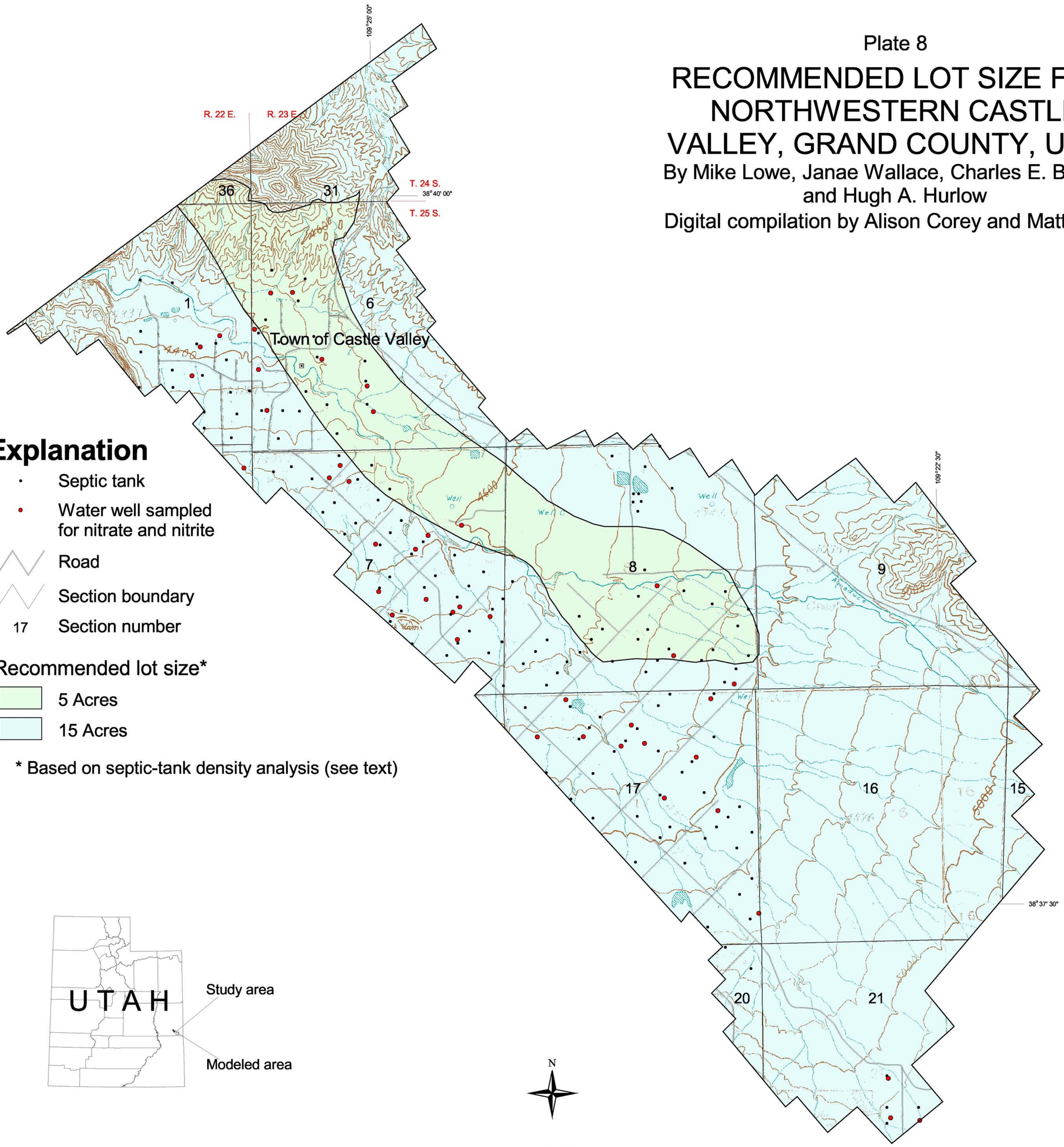
Projection: UTM Zone 12
Units: Meters
Datum: NAD27
Spheroid: Clarke 1866

UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources

Plate 8

RECOMMENDED LOT SIZE FOR NORTHWESTERN CASTLE VALLEY, GRAND COUNTY, UTAH

By Mike Lowe, Janae Wallace, Charles E. Bishop, and Hugh A. Hurlow
Digital compilation by Alison Corey and Matt Butler



Explanation

- Septic tank
- Water well sampled for nitrate and nitrite
- Road
- Section boundary
- 17 Section number

Recommended lot size*

- 5 Acres
- 15 Acres

* Based on septic-tank density analysis (see text)

N

1:15,000

0 0.5 1 Miles

0 0.5 1 Kilometers

Base map from U.S. Geological Survey Big Bend, Fisher Towers, Rill Creek, and Warner Lake 7-1/2 minute quadrangles.

Projection: UTM Zone 12
Units: Meters
Datum: NAD27
Spheroid: Clarke 1866

UTAH GEOLOGICAL SURVEY
UTAH GEOLOGICAL SURVEY
a division of
Department of Natural Resources