

Section 2.1 Attachments

TABLE D6-1. SURFACE DRAINAGE PROPERTIES, ESTIMATED PEAK FLOWS AND VELOCITIES

| SITE | DRAINAGE AREA (sq. mi) | ESTIMATED PEAK FLOWS (CFS) RECURRENCE INTERVAL (YRS) | | | | | |
|------------------|---------------------------|---|------|-------|-------|-------|--------|
| | | 2-YR | 5-YR | 10-YR | 25-YR | 50-YR | 100-YR |
| Cottonwood Creek | 80.2 | 454 | 1220 | 2150 | 3760 | 5420 | 7500 |
| Tex Draw | 5.2 | 170 | 456 | 782 | 1370 | 1970 | 2720 |
| Dry Willow Creek | 12.2 | 231 | 620 | 1070 | 1870 | 2700 | 3730 |
| Willow Creek | 13.2 | 231 | 638 | 1100 | 1930 | 2780 | 3840 |
| NDA1 | 0.25 | 43 | 85 | 122 | 177 | 224 | 277 |
| NDA2 | 0.33 | 50 | 101 | 145 | 212 | 271 | 337 |
| NDA3 | 0.24 | 42 | 83 | 119 | 172 | 218 | 270 |
| NDA4 | 0.3 | 48 | 96 | 137 | 199 | 254 | 315 |
| NDA5 | 0.65 | 75 | 153 | 223 | 332 | 429 | 541 |
| NDA6 | 3.2 | 189 | 407 | 611 | 950 | 1268 | 1648 |
| HDA1 | 0.12 | 28 | 55 | 77 | 109 | 136 | 166 |
| HDA2 | 0.4 | 56 | 114 | 164 | 241 | 309 | 385 |
| HDA3 | 0.25 | 43 | 85 | 122 | 177 | 224 | 277 |
| HDA4 | 0.48 | 63 | 127 | 184 | 272 | 350 | 438 |
| HDA5 | 0.34 | 51 | 103 | 148 | 216 | 277 | 344 |
| HDA6 | 0.81 | 85 | 175 | 256 | 384 | 499 | 631 |
| HDA7 | 0.49 | 64 | 129 | 187 | 275 | 354 | 444 |
| HDA8 | 0.2 | 38 | 75 | 106 | 152 | 193 | 237 |

25-YEAR VELOCITIES

| Channel Station (ft) | Base Width (ft) | Side Slope (?H:1V) | Bottom Slope (ft/ft) | Discharge (cfs) | Normal Flow Depth (ft) | Flow Area (ft ²) |
|----------------------|-----------------|--------------------|----------------------|-----------------|------------------------|------------------------------|
| CTW CRK | 100 | 2 | 0.0030 | 3760 | 4.768 | 522.3 |
| Tex DRW | 10 | 2 | 0.0100 | 1370 | 5.681 | 121.3 |
| DRY WIL | 20 | 2 | 0.0100 | 1870 | 5.211 | 158.5 |
| WIL CRK | 20 | 2 | 0.0080 | 1930 | 5.621 | 175.6 |
| NDA1 | 5 | 2 | 0.0250 | 177 | 2.056 | 18.7 |
| NDA2 | 5 | 2 | 0.0150 | 212 | 2.552 | 25.8 |
| NDA3 | 5 | 2 | 0.0290 | 172 | 1.952 | 17.4 |
| NDA4 | 5 | 2 | 0.0290 | 199 | 2.101 | 19.3 |
| NDA5 | 5 | 2 | 0.0170 | 332 | 3.075 | 34.3 |
| NDA6 | 5 | 2 | 0.0150 | 950 | 5.139 | 78.5 |
| HDA1 | 5 | 2 | 0.0400 | 109 | 1.419 | 11.1 |
| HDA2 | 5 | 2 | 0.0400 | 241 | 2.133 | 19.8 |
| HDA3 | 5 | 2 | 0.0400 | 177 | 1.825 | 15.8 |
| HDA4 | 5 | 2 | 0.0400 | 272 | 2.266 | 21.6 |
| HDA5 | 5 | 2 | 0.0400 | 216 | 2.019 | 18.2 |
| HDA6 | 5 | 2 | 0.0400 | 384 | 2.684 | 27.8 |
| HDA7 | 5 | 2 | 0.0400 | 275 | 2.488 | 24.8 |
| HDA8 | 5 | 2 | 0.0400 | 152 | 1.849 | 16.1 |

TABLE D6-1. SURFACE DRAINAGE PROPERTIES, ESTIMATED PEAK FLOWS AND VELOCITIES

| Channel Station (ft) | Wetted Perimeter (ft) | Hydraulic Radius (ft) | Flow Velocity (fps) | Top Width (ft) | Froude Number | Unit Discharge (cfs/ft) |
|-----------------------------|------------------------------|------------------------------|----------------------------|-----------------------|----------------------|--------------------------------|
| CTW CRK | 121.32 | 4.30 | 7.20 | 119.07 | 0.61 | 34.33 |
| Tex DRW | 35.40 | 3.43 | 11.29 | 32.72 | 1.03 | 64.14 |
| DRY WIL | 43.30 | 3.66 | 11.80 | 40.84 | 1.06 | 61.47 |
| WIL CRK | 45.14 | 3.89 | 10.99 | 42.49 | 0.95 | 61.77 |
| NDA1 | 14.19 | 1.32 | 9.45 | 13.22 | 1.40 | 19.43 |
| NDA2 | 16.41 | 1.57 | 8.22 | 15.21 | 1.11 | 20.98 |
| NDA3 | 13.73 | 1.27 | 9.90 | 12.81 | 1.50 | 19.32 |
| NDA4 | 14.39 | 1.34 | 10.29 | 13.40 | 1.51 | 21.63 |
| NDA5 | 18.75 | 1.83 | 9.68 | 17.30 | 1.21 | 29.78 |
| NDA6 | 27.98 | 2.81 | 12.10 | 25.56 | 1.22 | 62.18 |
| HDA1 | 11.35 | 0.98 | 9.80 | 10.68 | 1.69 | 13.91 |
| HDA2 | 14.54 | 1.36 | 12.19 | 13.53 | 1.78 | 26.01 |
| HDA3 | 13.16 | 1.20 | 11.21 | 12.30 | 1.74 | 20.46 |
| HDA4 | 15.13 | 1.43 | 12.59 | 14.06 | 1.79 | 28.53 |
| HDA5 | 14.03 | 1.30 | 11.84 | 13.08 | 1.77 | 23.90 |
| HDA6 | 17.00 | 1.64 | 13.80 | 15.74 | 1.83 | 37.03 |
| HDA7 | 16.13 | 1.54 | 11.08 | 14.95 | 1.52 | 27.57 |
| HDA8 | 13.27 | 1.21 | 9.45 | 12.4 | 1.46 | 17.47 |

TABLE D6D.1-1 WATER-LEVEL DATA FOR NICHOLS RANCH UNIT WELLS

| WATER-LEVEL ELEVATION (FT-MSL) | | | | | | | | | | | |
|--------------------------------|---------------------|--------------------------------|-------------|---------------------|--------------------------------|-------------|---------------------|--------------------------------|-------------|---------------------|--------------------------------|
| Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) |
| DW-4L | | | 3/20/2007 | 49.24 | 4665.90 | 7/10/2007 | 97.18 | 4667.46 | 10/31/2008 | 223.04 | 4660.24 |
| | | | 3/27/2007 | 50.20 | 4664.94 | 7/24/2007 | 98.06 | 4666.58 | 3/11/2009 | 221.44 | 4661.84 |
| 10/1/1978 | 289.00 | 4680.73 | 5/30/2007 | 49.73 | 4665.41 | 8/7/2007 | 97.67 | 4666.97 | 4/22/2009 | 221.20 | 4662.08 |
| 11/1/1978 | 288.50 | 4681.23 | 6/15/2007 | 49.55 | 4665.59 | 10/4/2007 | 96.65 | 4667.99 | 7/13/2009 | 222.90 | 4660.38 |
| 1/1/1979 | 288.00 | 4681.73 | 6/26/2007 | 49.71 | 4665.43 | 12/17/2007 | 96.96 | 4667.68 | MN-6 | | |
| 4/1/1979 | 289.00 | 4680.73 | 7/10/2007 | 49.99 | 4665.15 | 6/4/2008 | 93.10 | 4671.54 | 7/1/1981 @ | 84.00 | 4677.18 |
| 8/1/1979 | 289.00 | 4680.73 | 7/24/2007 | 51.33 | 4663.81 | 8/12/2008 | 93.24 | 4671.40 | 3/20/2007 | 102.53 | 4658.65 |
| 10/1/1979 | 289.00 | 4680.73 | 10/4/2007 | 49.83 | 4665.31 | 11/3/2008 | 92.90 | 4671.74 | 3/20/2007 | 102.56 | 4658.62 |
| 7/1/1981 @ | 289.00 | 4680.73 | 12/17/2007 | 50.00 | 4665.14 | 3/11/2009 | 92.20 | 4672.44 | 5/30/2007 | 103.20 | 4657.98 |
| 12/20/2006 | 311.48 | 4658.25 | 5/15/2008 | 46.78 | 4668.36 | 4/22/2009 | 91.50 | 4673.14 | 6/15/2007 | 103.20 | 4657.98 |
| 6/4/2008 | 299.44 | 4670.29 | 5/15/2008 | 46.78 | 4668.36 | 7/10/2009 | 85.70 | 4678.94 | 7/10/2007 | 103.37 | 4657.81 |
| DW-4M | | | 8/12/2008 | 46.25 | 4668.89 | MN-4 | | | 10/4/2007 | 103.85 | 4657.33 |
| | | | 10/31/2008 | 46.17 | 4668.97 | 7/1/1981 @ | 127.00 | 4673.36 | 12/17/2007 | 103.17 | 4658.01 |
| 10/1/1978 | 292.00 | 4678.17 | 2/2/2009 | 45.47 | 4669.67 | 12/14/2006 | 146.18 | 4654.18 | 5/15/2008 | 98.70 | 4662.48 |
| 11/1/1978 | 291.80 | 4678.37 | 4/22/2009 | 45.30 | 4669.84 | 3/20/2007 | 145.74 | 4654.62 | 5/15/2008 | 98.70 | 4662.48 |
| 1/1/1979 | 291.00 | 4679.17 | 7/10/2009 | 45.90 | 4669.24 | 5/30/2007 | 146.40 | 4653.96 | 8/12/2008 | 98.43 | 4662.75 |
| 4/1/1979 | 290.00 | 4680.17 | MN-2 | | | 7/10/2007 | 147.06 | 4653.30 | 10/31/2008 | 97.88 | 4663.30 |
| 8/1/1979 | 290.00 | 4680.17 | 7/1/1981 @ | 158.00 | 4682.00 | 10/4/2007 | 146.75 | 4653.61 | 3/11/2009 | 97.61 | 4663.57 |
| 10/1/1979 | 290.00 | 4680.17 | 12/14/2006 | 178.97 | 4661.03 | 12/17/2007 | 147.10 | 4653.26 | 4/22/2009 | 97.10 | 4664.08 |
| 7/1/1981 @ | 291.00 | 4679.17 | 12/14/2006 | 178.58 | 4661.42 | 5/15/2008 | 141.60 | 4658.76 | 7/13/2009 | 98.50 | 4662.68 |
| 9/2/2006 | 285.69 | 4684.48 | 3/20/2007 | 178.42 | 4661.58 | 5/15/2008 | 141.60 | 4658.76 | NR#1 | | |
| 6/29/2007 | 286.86 | 4683.31 | 3/20/2007 | 178.23 | 4661.77 | 8/12/2008 | 141.29 | 4659.07 | 6/1/1988 @ | 85.00 | 4673.88 |
| 9/26/2007 | 286.60 | 4683.57 | 3/27/2007 | 179.71 | 4660.29 | 10/31/2008 | 141.66 | 4658.70 | 3/20/2007 | 99.44 | 4659.44 |
| 10/4/2007 | 286.14 | 4684.03 | 5/30/2007 | 178.84 | 4661.16 | 3/11/2009 | 140.20 | 4660.16 | 4/18/2007 | 99.96 | 4658.92 |
| 12/17/2007 | 286.53 | 4683.64 | 6/26/2007 | 178.68 | 4661.32 | 4/22/2009 | 139.50 | 4660.86 | 5/2/2007 | 100.02 | 4658.86 |
| 8/12/2008 | 285.47 | 4684.70 | 7/10/2007 | 179.78 | 4660.22 | 7/13/2009 | 140.87 | 4659.49 | 5/14/2007 | 99.98 | 4658.90 |
| 7/13/2009 | 284.42 | 4685.75 | 7/10/2007 | 180.41 | 4659.59 | MN-5 | | | 5/30/2007 | 99.85 | 4659.03 |
| DW-4U | | | 9/10/2007 | 179.02 | 4660.98 | 7/1/1981 @ | 207.00 | 4676.28 | 6/4/2007 | 99.67 | 4659.21 |
| | | | 10/4/2007 | 179.00 | 4661.00 | 9/7/2006 | 204.61 | 4678.67 | 7/10/2007 | 100.26 | 4658.62 |
| 10/1/1978 | 233.00 | 4733.75 | 12/17/2007 | 179.21 | 4660.79 | 3/20/2007 | 227.22 | 4656.06 | 7/24/2007 | 101.14 | 4657.74 |
| 1/1/1979 | 233.00 | 4733.75 | 5/15/2008 | 175.62 | 4664.38 | 3/27/2007 | 229.77 | 4653.51 | 10/4/2007 | 101.25 | 4657.63 |
| 4/1/1979 | 233.00 | 4733.75 | 5/15/2008 | 175.62 | 4664.38 | 4/18/2007 | 227.99 | 4655.29 | 12/17/2007 | 99.63 | 4659.25 |
| 8/1/1979 | 233.00 | 4733.75 | 8/12/2008 | 175.28 | 4664.72 | 5/2/2007 | 227.90 | 4655.38 | 5/15/2008 | 96.41 | 4662.47 |
| 10/1/1979 | 233.00 | 4733.75 | 11/3/2008 | 175.38 | 4664.62 | 5/3/2007 | 227.77 | 4655.51 | 11/11/2008 | 96.01 | 4662.87 |
| 7/1/1981 @ | 233.00 | 4733.75 | 3/11/2009 | 173.87 | 4666.13 | 5/14/2007 | 227.79 | 4655.49 | 3/11/2009 | 96.28 | 4662.60 |
| 9/7/2006 | 230.55 | 4736.20 | 4/22/2009 | 173.30 | 4666.70 | 6/4/2007 | 227.90 | 4655.38 | 4/22/2009 | 94.70 | 4664.18 |
| 5/14/2007 | 231.53 | 4735.22 | 7/13/2009 | 174.89 | 4665.11 | 6/4/2007 | 227.86 | 4655.42 | 7/13/2009 | 95.25 | 4663.63 |
| 9/26/2007 | 230.80 | 4735.95 | MN-3 | | | 7/10/2007 | 228.71 | 4654.57 | 8/17/2009 | 97.15 | 4661.73 |
| 10/4/2007 | 230.24 | 4736.51 | 7/1/1981 @ | 79.00 | 4685.64 | 8/7/2007 | 229.15 | 4654.13 | | | |
| 6/4/2008 | 215.87 | 4750.88 | 12/14/2006 | 96.51 | 4668.13 | 10/4/2007 | 228.10 | 4655.18 | | | |
| MN-1 | | | 3/20/2007 | 96.10 | 4668.54 | 12/17/2007 | 228.40 | 4654.88 | | | |
| | | | 3/27/2007 | 96.94 | 4667.70 | 5/15/2008 | 223.80 | 4659.48 | | | |
| 1/1/1979 | 29.00 | 4686.14 | 4/18/2007 | 96.91 | 4667.73 | 5/15/2008 | 223.80 | 4659.48 | | | |
| 7/1/1981 @ | 30.00 | 4685.14 | 5/30/2007 | 96.59 | 4668.05 | 8/12/2008 | 222.87 | 4660.41 | | | |
| 9/7/2006 | 48.87 | 4666.27 | | | | | | | | | |
| 12/14/2006 | 50.62 | 4664.52 | | | | | | | | | |

Abandoned well

@ SE permit, use with caution

- NR#1

TABLE D6D.1-1 WATER-LEVEL DATA FOR NICHOLS RANCH UNIT WELLS

WATER-LEVEL ELEVATION (FT-MSL)

| Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) | Date | Water Level (ft-MP) | Water Level Elevation (ft-MSL) |
|----------------|---------------------|--------------------------------|------------------|---------------------|--------------------------------|------|---------------------|--------------------------------|------|---------------------|--------------------------------|
| URZN1-2 | | | 10/4/2007 | 89.20 | 4639.67 | | | | | | |
| | | | 12/17/2007 | 89.42 | 4639.45 | | | | | | |
| 12/14/2006 | 64.10 | 4650.21 | 3/12/2008 | 86.60 | 4642.27 | | | | | | |
| 3/23/2007 | 64.79 | 4649.52 | 3/12/2008 | 86.60 | 4642.27 | | | | | | |
| 3/27/2007 | 64.80 | 4649.51 | 6/25/2008 | 88.55 | 4640.32 | | | | | | |
| 5/30/2007 | 63.96 | 4650.35 | 8/12/2008 | 86.68 | 4642.19 | | | | | | |
| 6/4/2007 | 63.95 | 4650.36 | 10/31/2008 | 86.91 | 4641.96 | | | | | | |
| 6/15/2007 | 62.35 | 4651.96 | 3/11/2009 | 86.35 | 4642.52 | | | | | | |
| 6/26/2007 | 64.17 | 4650.14 | 4/22/2009 | 85.50 | 4643.37 | | | | | | |
| 7/10/2007 | 64.08 | 4650.23 | 7/10/2009 | 92.74 | 4636.13 | | | | | | |
| 7/24/2007 | 63.94 | 4650.37 | URZNG-5 | | | | | | | | |
| 8/7/2007 | 64.04 | 4650.27 | 7/23/2009 | 47.97 | 4742.65 | | | | | | |
| 8/28/2007 | 64.31 | 4650.00 | 8/17/2009 | 49.78 | 4740.84 | | | | | | |
| 10/4/2007 | 63.78 | 4650.53 | URZNG-6 | | | | | | | | |
| 12/17/2007 | 63.79 | 4650.52 | 7/23/2009 | 73.13 | 4712.02 | | | | | | |
| 5/15/2008 | 61.28 | 4653.03 | 8/17/2009 | 75.41 | 4709.74 | | | | | | |
| 5/15/2008 | 61.28 | 4653.03 | URZNG-6 | | | | | | | | |
| 8/12/2008 | 61.68 | 4652.63 | 7/23/2009 | 73.13 | 4712.02 | | | | | | |
| 10/31/2008 | 61.70 | 4652.61 | 8/17/2009 | 75.41 | 4709.74 | | | | | | |
| 2/2/2009 | 61.00 | 4653.31 | URZNG-6 | | | | | | | | |
| 4/22/2009 | 60.90 | 4653.41 | 7/23/2009 | 73.13 | 4712.02 | | | | | | |
| 7/10/2009 | 61.30 | 4653.01 | 8/17/2009 | 75.41 | 4709.74 | | | | | | |
| URZNB-1 | | | URZNG-6 | | | | | | | | |
| 12/14/2006 | 63.67 | 4652.69 | 9/10/2007 | 9.20 | 4629.24 | | | | | | |
| 3/21/2007 | 63.50 | 4652.86 | 10/4/2007 | 9.33 | 4629.11 | | | | | | |
| 3/27/2007 | 63.35 | 4653.01 | 12/17/2007 | 8.52 | 4629.92 | | | | | | |
| 5/30/2007 | 62.67 | 4653.69 | 3/12/2008 | 6.28 | 4632.16 | | | | | | |
| 5/30/2007 | 62.72 | 4653.64 | 6/4/2008 | 4.86 | 4633.58 | | | | | | |
| 6/15/2007 | 64.13 | 4652.23 | 6/24/2008 | 7.31 | 4631.13 | | | | | | |
| 6/26/2007 | 62.60 | 4653.76 | 8/12/2008 | 6.85 | 4631.59 | | | | | | |
| 7/10/2007 | 62.61 | 4653.75 | 10/31/2008 | 6.90 | 4631.54 | | | | | | |
| 7/24/2007 | 62.55 | 4653.81 | 3/11/2009 | 5.98 | 4632.46 | | | | | | |
| 8/7/2007 | 62.60 | 4653.76 | 4/22/2009 | 5.30 | 4633.14 | | | | | | |
| 10/4/2007 | 62.14 | 4654.22 | 7/13/2009 | 5.79 | 4632.65 | | | | | | |
| 12/17/2007 | 62.45 | 4653.91 | URZNG-6 | | | | | | | | |
| 5/15/2008 | 59.74 | 4656.62 | 9/10/2007 | 9.20 | 4629.24 | | | | | | |
| 5/15/2008 | 59.74 | 4656.62 | 10/4/2007 | 9.33 | 4629.11 | | | | | | |
| 8/12/2008 | 59.83 | 4656.53 | 12/17/2007 | 8.52 | 4629.92 | | | | | | |
| 10/31/2008 | 59.37 | 4656.99 | 3/12/2008 | 6.28 | 4632.16 | | | | | | |
| 2/2/2009 | 58.70 | 4657.66 | 6/4/2008 | 4.86 | 4633.58 | | | | | | |
| 4/22/2009 | 58.90 | 4657.46 | 6/24/2008 | 7.31 | 4631.13 | | | | | | |
| 7/10/2009 | 59.35 | 4657.01 | 8/12/2008 | 6.85 | 4631.59 | | | | | | |
| URZNF-3 | | | 10/31/2008 | 6.90 | 4631.54 | | | | | | |
| 9/10/2007 | 89.57 | 4639.30 | 3/11/2009 | 5.98 | 4632.46 | | | | | | |
| | | | 4/22/2009 | 5.30 | 4633.14 | | | | | | |
| | | | 7/13/2009 | 5.79 | 4632.65 | | | | | | |
| | | | W. OF WW1 | | | | | | | | |
| | | | 2/1/1975 @ | 310.00 | 4770.00 | | | | | | |
| | | | 9/26/2007 | 372.30 | 4707.70 | | | | | | |
| | | | 6/4/2008 | 358.18 | 4721.82 | | | | | | |
| | | | 8/12/2008 | 356.26 | 4723.74 | | | | | | |
| | | | 11/3/2008 | 357.21 | 4722.79 | | | | | | |
| | | | 3/11/2009 | 356.01 | 4723.99 | | | | | | |
| | | | 4/22/2009 | 358.16 | 4721.84 | | | | | | |

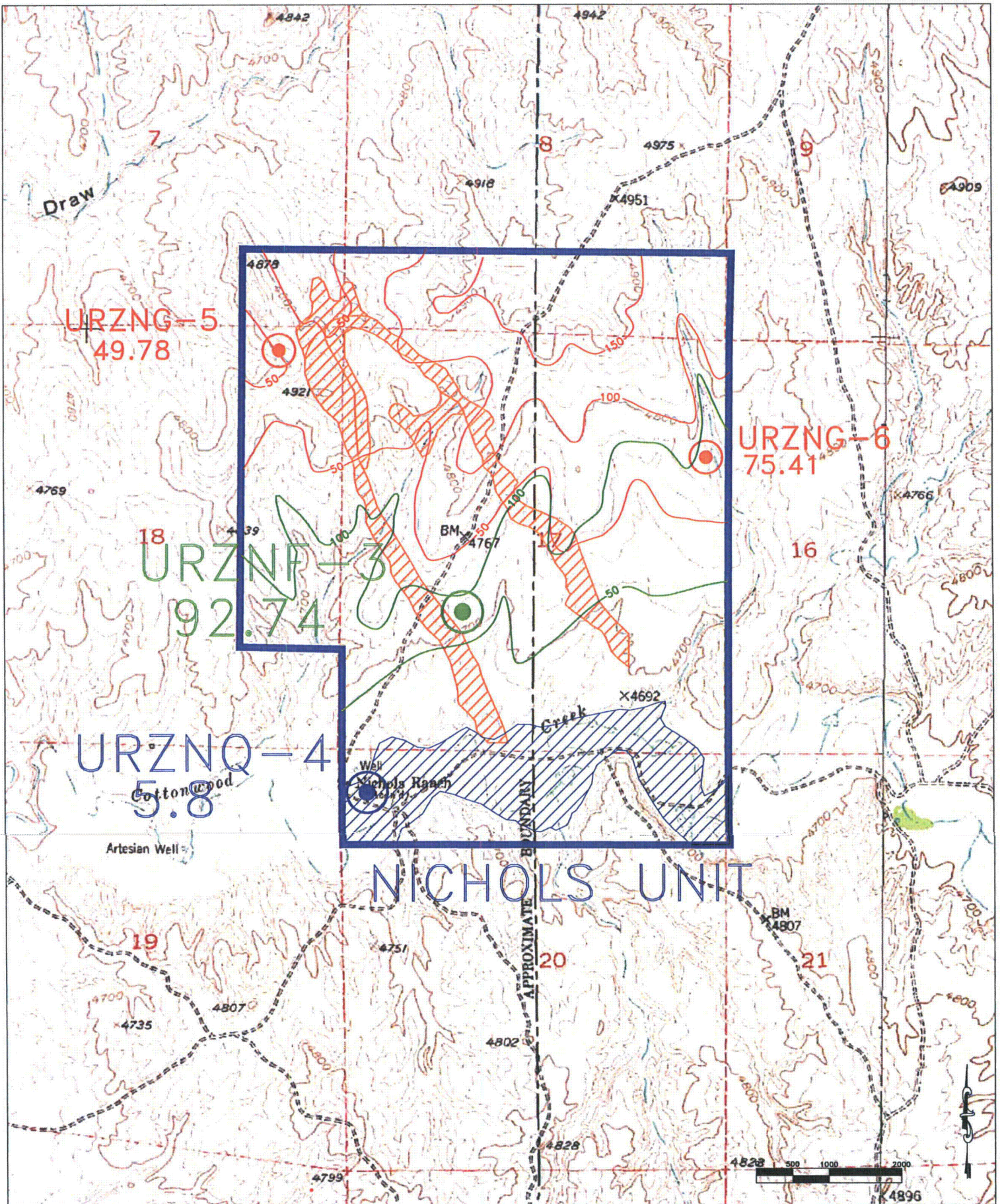
Abandoned well

@ SE permit, use with caution

- W. OF WW1

Rev. Aug. 2009

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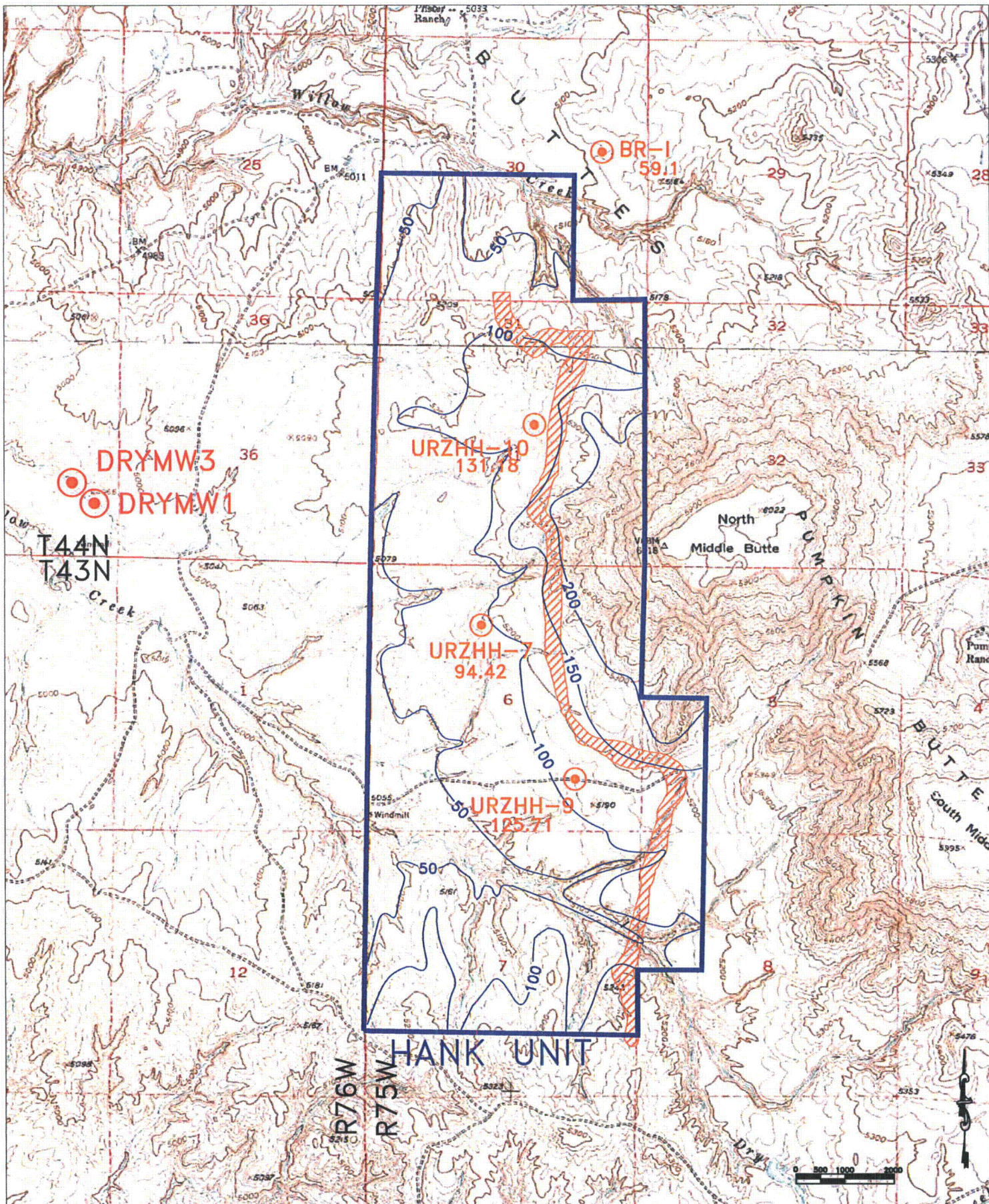
NICHOLS UNIT

By: RTS
 Date: 08/10/09
 Contour Interval: Revision Date: 8/09
 DWG:
 C:\PROJECTS\2009-14\SANDS-EDITED

| LEGEND: | |
|---------|--------------------------------------|
| | URZNG-4 ALLUVIAL WELL |
| | URZNF-3 F SAND WELL |
| | URZNG-6 G SAND WELL |
| | COTTONWOOD ALLUVIAL AQUIFER < 10 FT. |
| | F SAND-DTW |
| | G SAND-DTW |



FIGURE D6-7a. DEPTH TO WATER IN THE F & G SANDS AND COTTONWOOD ALLUVIAL AT THE NICHOLS RANCH UNIT, 2009, IN FT



By: RTS
 Date: 10/10/07
 Contour Interval: Revision Date: 8/09
 DWG:
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LEGEND:
—100— H SAND - DTW
● URZHH-7 H SAND WELL

Uranerz
 1701 East "G" Street
 P.O. Box 50850
 Cooper, Wyoming
 USA 82606-0850

FIGURE D6-7b. DEPTH TO WATER IN THE H SAND AQUIFER AT THE HANK UNIT, 2009, IN FT