

Ground-Water Resource Development in the Lolo-Bitterroot Ground-Water Characterization Area, Flathead, Lake, Mineral, and Missoula Counties, Montana

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Sheet 2. The number or water wells per section that are ≤ 100 ft deep and wells within 1 mile of major streams.

Legend: Maps B through F

Generalized geology

- Alluvium along major streams
- Glacial deposits
- Tertiary basin fill

Individual wells by total depth:

- 0 - 100 ft
- Between 100 and 300 ft
- 300 - 2,000 ft

Explanation

The number of wells per section shown in Map A is for January 1, 2005, so the data are comparable to Maps E and H, Sheet 1. The data for Maps B through F were retrieved from the Montana Ground-Water Information Center (GWIC) database in September 2006. Consequently, the total number of wells in the Lolo-Bitterroot Ground-Water Characterization Area is shown as 28,521 wells (Table 1, far right), compared to the earlier total of 26,905 wells shown on Sheet 1, Map E. Map A illustrates the density of wells ≤ 100 ft deep within the study area. Maps B through D illustrate individual wells of specific depth intervals located within 1 mile of major streams. Maps E and F show the distribution and depths of irrigation, commercial, industrial, and public supply wells that are within 1 mile of major streams.

Sixty-two percent of the 28,521 well records for the Lolo-Bitterroot Ground-Water Characterization Area are for relatively shallow wells, ≤ 100 ft deep (Map A). Fifty-seven percent of all well records are within 1 mile of a major stream (Maps B through D). Forty-one percent of all well records are both shallow (≤ 100 ft deep) and within 1 mile of a stream (Map B). The numbers of higher yield wells for uses such as irrigation, commercial, industrial, and public water supplies that are within 1 mile of streams are modest compared to similar numbers for all water uses (Maps E and F).

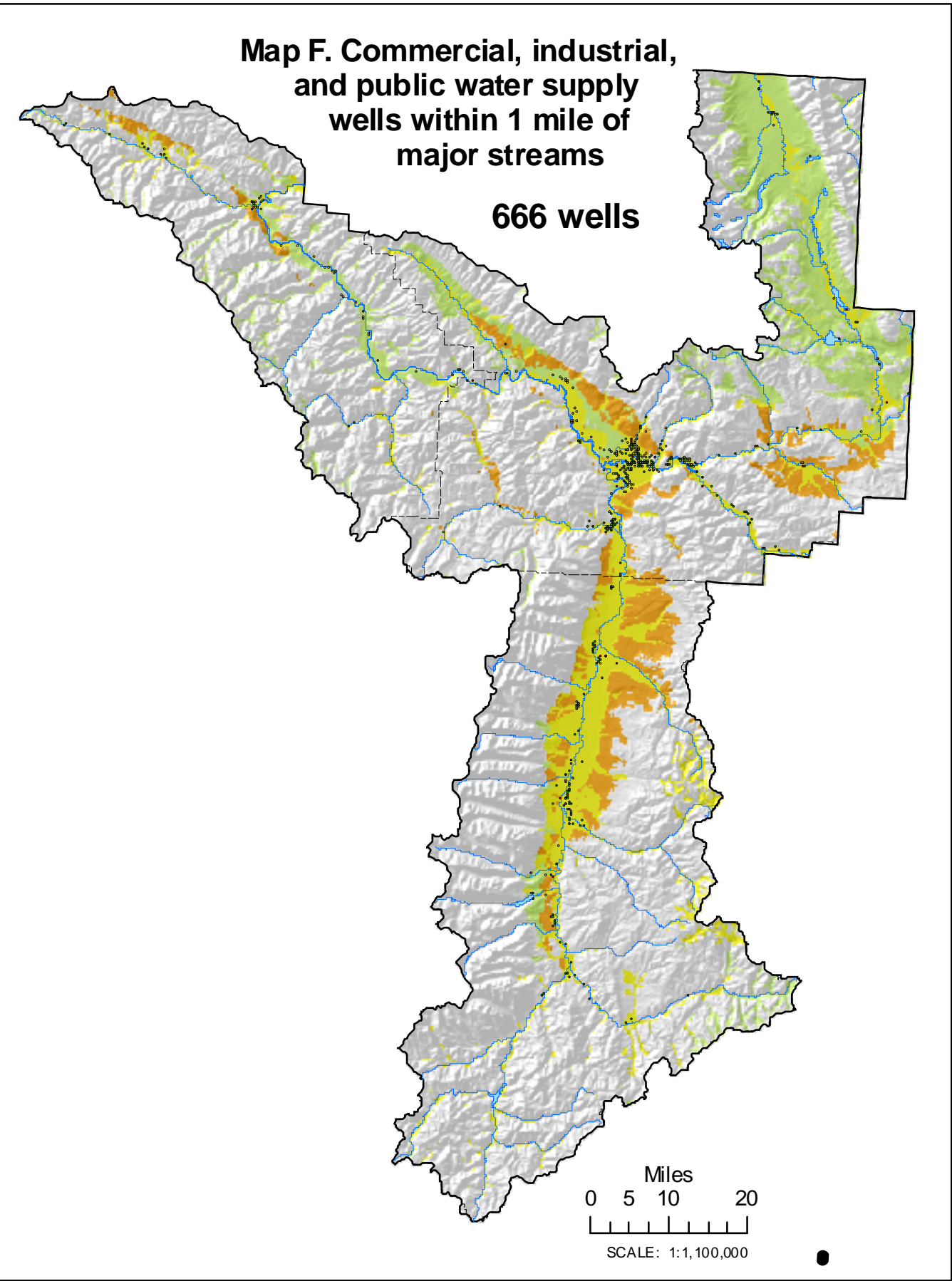
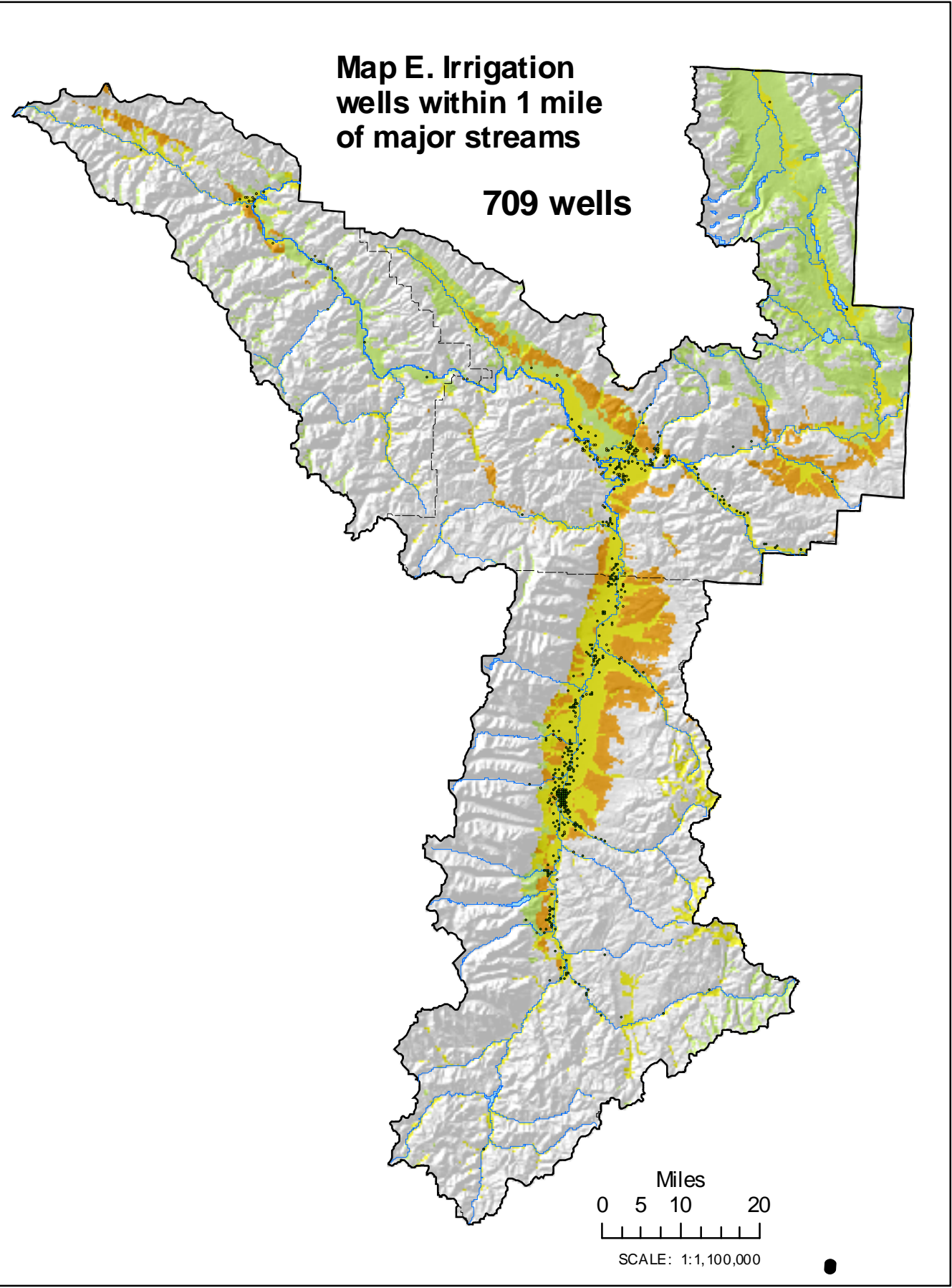
Eighty-seven percent of well records in the Lolo-Bitterroot Ground-Water Characterization Area are for domestic use wells (see the statistics at far right). Estimates of consumptive use by the US Geological Survey provides another perspective. The total estimated consumptive use of ground water for Mineral, Missoula, and Ravalli Counties is about 23,322 acre-ft per year. The total amount of water withdrawn from both surface and ground-water sources annually in these counties is about 520,000 acre-ft. For comparison, the average annual runoff of the Clark Fork River below Missoula is about 3,870,000 acre-ft. Further work might combine water use estimates with specific well locations to determine areas where streamflow may be significantly impacted by ground-water use, and whether such impacts conflict with other uses.

References

Montana Ground-Water Information Center, Montana Bureau of Mines and Geology, Montana Tech of The University of Montana (<http://mbmgwvic.mtech.edu/>).

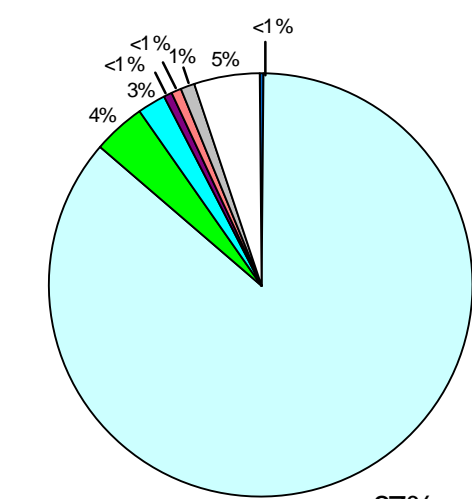
Natural Resource Information System, Montana State Library, for base map coverages (<http://nris.mt.gov/>).

Cannon, M.R. and Johnson, D.R., 2004, Estimated water use in Montana in 2000: US Geological Survey Scientific Investigations Report 2004-5223, 50 p.



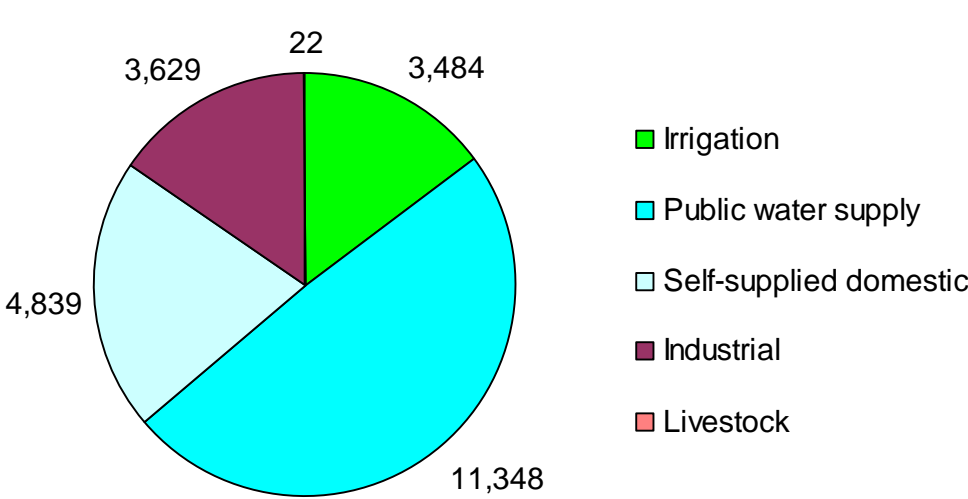
Statistics for Wells in the Lolo-Bitterroot Ground-Water Characterization Area

General distribution of wells by use



- Commercial
- Domestic
- Irrigation
- Public water supply
- Industrial
- Stockwater
- Unused
- Other

Estimated consumptive use of ground water (Acre-ft per year, Mineral, Missoula, and Ravalli Counties)
Source: Cannon and Johnson, 2004



- Irrigation
- Public water supply
- Self-supplied domestic
- Industrial
- Livestock

Table 1.
Number of wells by selected use, proximity to streams, and depth

	All wells	Wells within 1 mile of major streams	Wells within 1 mile of major streams and less than or equal to 100 ft deep
All uses	28,521	16,370	11,752
Commercial	102	75	57
Domestic	24,555	13,779	9,854
Irrigation	1,081	709	596
Public water supply	661	488	305
Industrial	133	103	58
Stockwater	245	140	114
Unused	282	164	125
Other	1,462	912	643