How We Make Maps

Making a map is easy. Making a good map is hard. It is technical, tedious and expensive. A lot of the base data we have come to expect in a map comes from government sources. But each branch of government has it's own objectives, resources, history and commercial limitations. At *Map Metrics*, our job is to find these many sources, pick up the best data and convert it all into a unified, readable product that serves your needs. This is a job that no one government agency can do effectively in the marketplace.

Map Metrics maps counties between the Cascades and the Rocky Mountains along the Canadian Border. This is a small market. We can't afford to make big runs of thousands of map books and wait years for them to sell. The information goes out-of-date too quickly. Our primary market is emergency service providers: fire, police and ambulance. This data needs to be accurate, current and quickly understood.

To meet that need, we print books in small batches directly from our GIS system. We stay in contact with Planning and other offices in each county to keep our data current. We print on tough paper in water and sun-proof solid ink.

Using computerized Geographic Information Systems (GIS), we overlay layer after layer of map information, often combining data from many sources and measuring them against each other to extract more information. The computer controls not only the way objects look, but also the information that is attached to them. The names and address ranges that you find in the index are properties of place labels and road lines that you see on the map.

Some of the resources combined into these books include: aerial photography – used to trace remote roads and verify other map layers; satellite images of land cover and elevation; water bodies of different kinds from many different sources; and road lines from still more sources.

Several agencies maintain the otherwise invisible grid of the Public Land Survey (PLS): sections, townships and ranges. In the best cases, they update it with survey data measured on the ground. In the worst, they only track their own holdings and ignore the rest. As the agencies get larger, the range of accuracy widens. The Forest Service, for instance, may have very accurate lines on its borders, and only virtual sections within them. The section corners may have an accuracy of +/- 40 feet. But that is an average. A particular corner may be a fraction of an inch off or hundreds of feet. If you want to establish property boundaries, get survey help. These books show boundaries because they establish jurisdictions, particularly those for public land ownership, which is critical to law enforcement. They are not meant to depict exact locations.

These books also show many political boundaries: counties, cities, parks and fire districts. Some of these change regularly. We try to keep up with these changes with every edition and clearly mark the date on the cover. As your book becomes older, these boundaries become more suspect.

We focus primarily on road lines, identification and addresses. The Forest Service, Bureau of Lands, the USGS, the Tribes, each local county and many cities as well as private individuals and corporations control the ownership, maintenance, naming and addressing of these roads. We use data from all of these sources to produce these books. Additionally, we often have access to lines and points from Global Positioning Systems (GPS) to verify the roads and other features on our maps. None of these sources or systems is perfect. The redundancy built into integrating the information about a particular place using GIS is what gives us confidence in our maps.

After we have assembled base layers from photography and satellite imagery, overlaid them with water bodies and streams, laid down boundary lines and survey lines and finally assembled road lines, one of the most tedious tasks in mapping begins, - labeling.

There are a lot of names out there, place names, water names, cities and counties, parks and forests. But most of all – roads. Finding places for all of these names in ways that enhance the other map features rather than obscure them, is never ending. Forgive us if sometimes these layers are confusing. Inevitably, someone will name a tiny driveway with a moniker like "Not In My Backyard Cul de Sac" which is almost impossible to fit in the space allotted. Look for arrows in crowded areas. Some government roads listed in the index will not have labels on them. Main road numbers are shown wherever possible. In highly populated areas, most labels will only show up on expanded pages. There are always arguments about spelling. If you feel a name is spelled incorrectly, contact us. Lives may depend on getting the details right.

The body of map-based information now available using computers opens doors to connections and windows to our world that we cannot find anywhere else. At *Map Metrics*, we are constantly finding new uses for this information and this technology. Please visit our website, www.mapmet.com, to see how we are using GIS to explore history and increase access to rural businesses.

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