

A CLOSER LOOK: GEOSPATIAL INFORMATION AND DATA

What does the term “geospatial” mean?—Geospatial “pertain[s] to the geographic location and characteristics of natural or constructed features and boundaries on, above, or below the earth’s surface” (<http://dictionary.reference.com/browse/geospatial>); the term refers especially to data that are geographic and spatial in nature.

What is geospatial information?—Geospatial information is an information product derived from geospatial data. This information product can be a map, table, or narrative report.

What is coal-mining geospatial data?—With respect to surface and underground coal mining, geospatial data describes the geographic location and characteristics of the features and boundaries of coal-mining operations on or below the earth’s surface. Examples include but are not limited to (1) the boundaries of surface coal-mining permit areas, underground coal-mining extents, and critical earth fills; (2) the locations of surface- and ground-water monitoring points, including any water-quality analyses associated with them; (3) the locations of, geologic drill holes and their chemical attributes; and (4) other coal-mining features that are commonly shown on the coal-mining operations maps required and used by coal-mining regulatory authorities in the United States.

What is the value of standardizing coal-mining geospatial data?—Standardization of data helps ensure continuity of communication among all its users. For parties working on coal-mining issues to correctly and effectively create, use, or exchange coal-mining geospatial data sets, they must first understand the meaning of the data captured in these data sets. Standardization also helps ensure that features associated with coal-mining operations are accurately and consistently described and located by all parties. Finally, standardization helps reduce error when coal-mining geospatial data sets are exchanged or combined.

DATA STANDARDS AND YOU

Have you ever used a road atlas or a State highway map to help you take a vacation? Roads are constructed and mapped by State and local agencies, and, without data standards, it would simply not be possible for them to create reliable maps with consistent mileage scales, road-type designations, and many of the other features we have all come to rely on in maps. Among many other things, without data standards, we could not tell from one location to another if a road ended or instead merely changed from a concrete to a gravel surface.



National data standards make it possible to draw reliable road maps that provide travelers consistent and reliable road information across the nation. And these statewide and nationwide maps are only possible because local and State agencies got together years ago to develop standards by which they draw their local street maps. Mining companies, mine regulators, and people who live, work, and play in areas where coal is or was historically mined likewise have the need for consistent, understandable information on mine locations and features. This information can help mining companies protect the lives of mine workers, regulators make better decisions regarding permitting actions, and citizens and businesses optimize where they buy, build, and recreate in mined areas.

What is a coal-mining geospatial data steward?—Each State, tribal, or Federal office authorized to enforce the Surface Mining Control and Reclamation Act of 1977 (SMCRA) has designated a single point of contact with authority to represent the geospatial technology needs of their respective organizations at a national level. These data stewards help coordinate and promote the use of geospatial technology to help implement SMCRA.

What application does standardized geospatial data have in the surface and/or underground coal-mining arenas?—Features shown on a map are projected from a geographic coordinate system on the earth's surface to a Cartesian coordinate system on the map using X and Y axes, and all mapped data must contain at least these two dimensions. Some spatial data, however—for example, geologic drill holes and considerable information pertaining to underground coal mining—, also contain a third dimension, which is referenced on a Z axis.

Initially, the National Coal Mining Geospatial Committee's (NCMGC's) Coal-Mining Spatial Data Standards ASTM Task Group will confine itself to developing standards for features and/or boundaries that can be measured in terms of a two-dimensional Cartesian coordinate system. These standards will help define how coal-mining features (permit boundaries, critical earth-fill locations, geologic drillhole locations, surface- and ground-water monitoring locations, etc.) that currently exist in analog format (as two-dimensional coordinates on paper maps) can be described in digital format for use in computer software applications. All features of the same type can then be extracted from all available maps to build data sets (or “layers”) of similar themes. The layers can then be shared among all members of the SMCRA community.