Primary Corner Identifier for GCDB

Background

The Geographic Coordinate Data Base (GCDB) created by the Bureau of Land Management (BLM) has developed a naming convention for corners of the Public Land Survey System (PLSS). This six digit number works for the computations the BLM performs on a township. The first three digits give an indication as to the east-west position in the township. The second three digits indicate the north-south position in the township. The following Point IDs are for the section corners of a township:

100700 6	200700 5	300700 4	400700 3	500700 2	600700 1	700700
100600 7	200600 8	300600 9	400600 10	500600 11	600600 12	700600
100500 18	200500 17	300500 16	400500 15	500500 14	600500 13	700500
100400 19	200400 20	300400 21	400400 22	500400 23	600400 24	700400
100300 30	200300 29	300300 28	400300 27	500300 26	600300 25	700300
100200 31	200200 32	300200 33	400200 34	500200 35	600200 36	700200
100100	200100	300100	400100	500100	600100	700100

Because Point IDs are referring to corners in one township only, corners common to more than one township have more than one Point ID. A township corner common to four townships would have four different six-digit Point IDs. Additionally some special surveys such as mineral surveys have a corner in common with a rectangular corner. In this case the mineral survey adds another identifier for the corner.

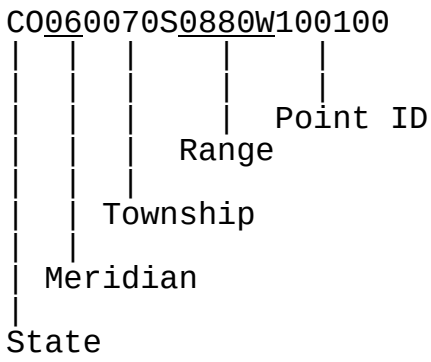
Problem

Merging multiple townships into one seamless coverage within a Geographic Information Systems (GIS) requires a common point and not a point entered four times.

There is a need to have only one unique name (one Point ID) for each corner of the PLSS. Other Point IDs and townships will still be associated with the corner, but one ID would be the defining name for a corner common to multiple townships.

Proposal

Each corner has a GCDB Point ID assigned to it. That Point ID pertains to only one township. This paper is proposing to add township, range, meridian, and state to the Point ID to make a unique name for each corner. An example for the southwest corner of section 31 of T.7S., R.88W., 6th PM, Colorado would be:



This same corner would be common to four townships and have four long names. This paper is proposing using the name with the lowest name alphabetically, which is the lowest Point ID. The above corner would have a unique name and three associated names:

CO060070S0880W100100	-	Unique name
CO06080S0880W1007000	-	Associated names
CO060070S0890W700100		
CO060080S0890W700700		

This can be used across adjacent meridians:

CO060150S1040W300200	-	Unique name
CO230510N0190W437400	-	Associated name

Or state lines:

CO230320N0130W400200	-	Unique name
NM230320N0130W400200	-	Associated name

Databases containing information on corners will be able to have one record for a corner position. That record would include things that pertain to the corner like coordinates, elevation, monumentation, and who collected the data. This information would not have to be duplicated for associated townships. As time goes on multiple coordinates will be collected for the same corner. These coordinates come from different qualities of collection (digitized vs. GPS) or multiple monuments all reporting to be the same corner. The “porcupine corner” situation where there are multiple monuments per corner could be related to the same primary corner name as described above but each monument would be designated so that the surveyor would know that these were different monumented points for the same corner.

The associated names or alias could be either stored in the same data table in a related table.

Conclusion

Having a unique naming convention for corners will allow a unified way for surveyors to contribute new information on found corners into GCDB. This new data will strengthen the GCDB for that corner and the surrounding corners. This data will allow surveyors to simplify

the research for what has been found in the past and where the corner is located easier. Knowing where a corner is and what it is monumented with reduces field time and cost.

By identifying a natural system such as the one proposed here, future software applications such as Survey Analyst can be more easily incorporated into the workflow and regional adjustments can be done across township boundaries.