Breakline Procedures

Processing Procedures

Lidar stereo pairs capable of deriving an accurate water surface were created in GeoCue from LAS that had a ground class macro run on it. Ponds, streams, islands, and stream centerlines were collected by senior staff using stereo in Summit Professional and MicroStation. Ponds were collected based on the size of being two acres or greater; streams collected were greater than one hundred feet in width; islands collected were one acre or greater. Z-accurate centerlines were collected on flowing water. The MicroStation file was then exported as a .dxf to load into ArcMap. In ArcMap the Coordinate reference System was set to NAD_1983_2011_StatePlane_Michigan_South_FIPS_2113_Ft_Intl. The *.dxf was loaded, the data was separated into shapefiles for ponds, streams, islands, and centerlines. Shapefiles were then checked to make sure the same amount of ponds, steams, islands, and centerlines collected in MicroStation match those created in ArcMap.

Quality Assurance Procedures

Islands were clipped from ponds and streams to create a continuous feature. A Continental Mapping proprietary tool was used to check the monotonicity of each centerline. If there were any errors on a centerline shapefile another Continental Mapping proprietary tool was used to fix the monotonicity. An LP360 tool called *Flatten Rivers Polygon* was used to flatten streams to the elevation value prescribed by the centerline. The monotonicity of each stream shapefile was checked using a Continental Mapping proprietary tool. Then a Continental Mapping proprietary tool was used to fix the monotonicity of each stream shapefile that possessed an error. A Continental Mapping proprietary tool was used to check the elevations of each pond collected for absolute Z continuity. If there was an elevation change on a pond a Continental Mapping proprietary tool was used to flatten the pond. The stream shapefile and pond shapefile were combined into one breakline shapefile for further use in flattening the DEM grid. This shapefile was exported into a file geodatabase. Further Q/C of the breakline shapefile is made by thoroughly observing its appearance when used in conjunction with bare earth LAS after a test elevation grid is produced in Global Mapper.