Compliance Component

DEFINITION

Name	Global Positioning Systems (GPS) – Survey Grade Receivers
Description	The Survey Grade GPS receivers are mainly used for very specialized surveying-related activities. For example, professional land surveyors use these GPS receivers for geodetic and boundary surveys. These systems produce data of the highest horizontal and vertical positional accuracy, but are very expensive and complex. The use of a survey grade system requires specialized training and one or more dedicated program staff to oversee its use and maintenance. Survey grade GPS data are generally differentially corrected using real-time techniques, but may also be post-processed to increase their accuracy even more. This guidance document is one of three such documents to help agencies and their staff evaluate the type of GPS receiver to use to collect feature location data. It presents several major issues and characteristics to consider when comparing and ultimately selecting and appropriate GPS receiver.
Rationale	A program intending to facilitate surveying applications must choose a receiver capable of capturing and collecting data that adequately support its business needs. The program's resources (i.e. Staff, hardware, software) must also be sufficient to support the use and maintenance of the selected survey grade GPS receivers. Therefore, choosing the right GPS surveying receiver for a specific project requires serious consideration of the following: • Anticipated uses of the feature location and attribute data to be collected • Program data accuracy requirements for the data to be collected • Available program resources to support data collection and processing activities • Type, number, and other characteristics of features to be located • Characteristics (i.e. Rural vs. urban, remote vs. nearby) of the data collection site • Need to identify and use existing feature location or attribute data • Need to identify and use existing data collection procedures or standards • Type of feature attribute data to be collected • How the features to be located will be represented (i.e. Points, lines, or areas)
Benefits	GPS data are used for many different resource / asset inventory, management, and tracking purposes within and across agencies and organizations. The benefits of using GPS receivers to collect feature locations and attributes in the field include: • Capture more accurate field data for mapping and analysis • Collection of vertical data • Locate features not identifiable on maps, photographs, or other 'base' sources • Increase the efficiency of field data collection • Navigate to a site or feature of interest

ASSOCIATED ARCHITECTURE LEVELS	
Specify the Domain Name	Information
Specify the Discipline Name	Geospatial Information Technology
Specify the Technology Area Name	Global Positioning System (GPS)
Specify the Product Component Name	

COMPLIANCE COMPONENT TYPE	
Document the Compliance Component Type	Guideline
Component Sub-type	

COMPLIANCE DETAIL	
State the Guideline, Standard or Legislation	**Survey Grade GPS** **Primary Uses** – Horizontal and vertical measurements for boundary analysis; positioning of the public land survey system; layout of construction sites; topography for structural and civil design. **Horizontal Data Accuracy** – Less than 2 cm (real-time correction); additional post-processing may improve the accuracy to less than 1 cm **Vertical Data Accuracy** – Less than 2 cm (real-time correction); additional post-processing may improve the accuracy to less than 1 cm **Differential Correction Options** –Receivers are real-time or static; additional post-processing to improve accuracy is available on all receivers **Type of Features Collected** – Points, lines, and areas; primarily used for point data **Option to Load Custom Data Dictionary with Feature Attributes** – all receivers **Option to Load Coordinate Systems, Projections, Datums / Spheriods** – all receivers **Option to Navigation Using Waypoints** – all receivers but not practical in operation **Time required to 'Lock on' to Satellites before Collecting Data** – Sub-minute **Number of Data Points Collected / Stored before Download Required** – More than 50,000 points **Training Requirements** – Advanced **Cost** - $35,000 to $75,000 depending on system selected.

Document Source Reference #	Much of this documentation was extracted from the Wisconsin Department of Natural Resources white paper entitled: **Comparing Global Positioning System (GPS) Tools:** *Selecting the right tool for the job!* It is available at : http://www.dnr.state.wi.us/org/at/et/geo/location/gps_info.html

Compliance Sources			
Name	Missouri Department of Natural Resources, Geological Survey and Resource Assessment Division, Land Survey Program	*Website*	http://www.dnr.mo.gov/
Contact Information	State Land Surveyor		
Name	Missouri Dept. of Transportation	*Website*	http://www.modot.mo.gov
Contact Information			

KEYWORDS	
List Keywords	Survey, GPS, Global Positioning System, vertical accuracy, horizontal accuracy, feature collection, points, lines, areas, positions, receiver, differential correction, WAAS, Wide Area Augmentation System, base station, location, way points, navigation,

COMPONENT CLASSIFICATION

Provide the Classification	☐ *Emerging*	☒ *Current*	☐ *Twilight*	☐ *Sunset*
Sunset Date				

COMPONENT SUB–CLASSIFICATION

Sub-Classification	Date	Additional Sub-Classification Information
☒ *Technology Watch*	2/1/05	Selective Availability; GPS Modernization; Galileo; Blue Tooth;
☐ *Variance*		
☐ *Conditional Use*		

Rationale for Component Classification

Document the Rationale for Component Classification	Missouri Departments: Natural Resources, Transportation, Office of Administration,

Migration Strategy

Document the Migration Strategy	

Impact Position Statement

Document the Position Statement on Impact	

CURRENT STATUS				
Provide the Current Status	☐ *In Development*	☐ *Under Review*	☒ *Approved*	☐ *Rejected*
AUDIT TRAIL				
Creation Date	11/11/04	*Date Approved / Rejected*	2/8/05	
Reason for Rejection				
Last Date Reviewed		*Last Date Updated*		
Reason for Update				