

THE MONTANA SPATIAL DATA INFRASTRUCTURE (MSDI)

FY15 WORKPLAN DRAFT

*Produced by the Montana State Library in conjunction with the MSDI
Theme Stewards and Leads*

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ACRONYMS USED IN THIS DOCUMENT

1. BLM – U. S. Department of Interior’s Bureau of Land Management
2. CadNSDI_ MT – The digital representation of the PLSS that will be maintained by the Montana State Library
3. FME – Safe Software’s feature manipulation engine
4. ETL – common for Extract, Translate and Load data transactions
5. FGDC – Federal Geographic Data Committee
6. GCDB – BLM’s Geographic Coordinate Data Base
7. MAGIP - Montana Association of Geographic Information Professionals
8. MCO – Montana Climate Office
9. MCPD – Multi-State Control Point Database
10. MDT – Montana Department of Transportation
11. MBMG – Montana Bureau of Mines and Geology
12. MTNHP – Montana Natural Heritage Program
13. MSDI – Montana Spatial Data Infrastructure
14. MSL – Montana State Library
15. NRCS – U. S. Department of Agriculture’s Natural Resources Conservation Service
16. NRIS - Natural Resource Information System; part of the MSL Geographic Information Program
17. NVC – National Vegetation Classification
18. PLSS – Public Land Survey System
19. USGS – U.S. Department of Interior’s United States Geological Survey
20. WBD – Watershed Boundary Dataset

MSDI DATA WORK PLAN

The Montana State Library (MSL), working with Montana Spatial Data Infrastructure (MSDI) theme stewards and theme leads, has reviewed FY15 maintenance plans and enhancement priorities for each MSDI theme. It is based on the same general process as the last two years but combines the maintenance and enhancement that were broken out individually in the FY 13 and FY 14 plans (discussion of this change is on page 4):

1. MSDI education, outreach and coordination
2. MSDI maintenance and enhancement projects

While there are differences in the nature of data content associated with each theme, there also are many similarities. Theme stewards and leads were asked to provide their best estimates of the level of effort required to provide outstanding theme stewardship. This included their estimate of hours to accomplish a base work level for categories one and two that would keep each theme at today's levels in terms of content and access. They were also asked to estimate the level of effort for projects to improve content and access if appropriate. Finally they were asked to report on the status and progress accomplishing the enhancement, research and development projects that were included in the FY14 plan. That progress report is included as Appendix B in this document.

No investigation to date has ever adequately captured the total annual level of effort required for MSDI stewardship. Many factors make it difficult and include:

1. Many themes rely on sub-stewards which are local, tribal, private, state and federal GIS data collectors that submit data for integration into statewide themes.
2. One-time university or other sector research projects that contribute data.
3. Some tasks are difficult to quantify in terms of time expense, for example responses to email or phone calls which assist data users.
4. Massive scientific data collection efforts, for example soils classifications, that involve soil scientists and data analysts whose work eventually ends up as a GIS theme.

With this in mind, MSDI stewards and leads have provided their best estimate of **THEIR** stewardship time that will be devoted to MSDI in FY 15. For example MSL has 9 staff in our Geographic Information Program. We estimate that approximately 77% of our total time is dedicated to MSDI work. The Level of Effort in Hours column represents burdened hours at 80% of a full FTE to allow for vacation time, sick time, necessary agency meetings unrelated to MSDI etc. The following table represents MSDI theme steward's best estimate of their total staff resources that will be dedicated to MSDI in FY15.

Theme	Steward	FTE Devoted	Level of Effort in Hours
General MSDI Projects & Coordination	MSL	1.5	2502
Administrative Boundaries	MSL	0.7	1167.6
Cadastral	MSL	1.7	2835.6
Climate	UM	2	3336
Elevation	USGS	0.4	667.2
Geodetic Control	MSL	0.7	1167.6
Geographic Names	MSL	0.1	166.8
Geology	MBMG	1	1668
Hydrography	MSL	1.5	2502
Hydrologic Units	NRCS	0.1	166.8
Land Cover	MNHP	3	5004
Orthoimagery	MSL	0.1	166.8
Soils	NRCS	13.5	22518
Structures and Addresses	MSL	0.7	1167.6
Transportation	MSL	0.5	834
Wetlands	MNHP	2.8	4670.4
		Total	50540.4

MSDI EDUCATION, OUTREACH AND COORDINATION

MSDI education, outreach and coordination are required for each and every theme and go far beyond what a state GIS coordinator can accomplish. Each theme steward/lead must conduct some basic coordination and outreach tasks to meet user needs. Those basic functions or common outreach include things like work plan development, user outreach, technical support to users, and updating a theme's web presence. A theme might have some specific outreach identified. For example the Land Cover theme holds several trainings for University of Montana forestry and conservations students. Finally, there is cross theme coordination that is vital to maintaining and enhancing themes. For example Administrative Boundaries may be enhanced through interaction with the Geodetic Control and Cadastral themes and such interaction is difficult if communication between theme stewards and leads doesn't take place. Administrative Boundaries relies on updated Cadastral data which in turn relies on accuracy enhancements to the PLSS. Accuracy enhancements to the PLSS occur primarily when additional survey (Geodetic) control points are collected and discovered through the submittal process to the Multi-state (Montana and Idaho) Control Point Database. To better meet that cross theme coordination MSL will organize three MSDI steward/lead meetings in FY 15.

In addition to theme specific education, outreach and coordination MSDI as a whole requires similar coordination including the standardized MSDI data discovery with standardized and current metadata and archival procedures. This is a primary function of the State GIS Coordinator and geographic information staff at MSL.

Like theme maintenance and enhancement, the time it takes for theme coordination varies. For example, as the newest of MSDI theme stewards, the UM Climate office spends a great deal of time making first time visits to state and federal agencies to be sure that climate data users understand what climate based data is available and how to use it. Theme stewards and leads believe it is reasonable to assume that 10% of total available time is put toward on MSDI education, outreach and coordination efforts. The large number of NRCS soil scientists working on the soils database skew the data so we estimate that approximately 3000 (rather than 5000) hours is a realistic estimation of level of effort.

MSDI THEME MAINTENANCE AND ENHANCEMENT PROJECTS

MSDI theme maintenance consists of the day to day tasks theme leads need to accomplish to keep the theme at present levels of accuracy, completeness and currency. Maintenance efforts are therefore subject to a theme's maturity as the authoritative source of statewide data and vary significantly. Even if all themes were at a base level of completeness, maintenance levels would still vary based on the nature of the data. It is only logical that maintenance of the cadastral layer requires significantly more work than that of imagery. Maintenance of some themes takes up almost all the stewardship time while others require almost no maintenance. For example maintaining and updating the structure/address points from over 50 unique providers is estimated to take approximately 1,100 hours. On the other hand maintenance of the geographic names theme is estimated at 140 hours, ten percent of that required for structure/address points. Theme stewards and leads broken out common maintenance tasks into the following categories:

1. Data maintenance & updates (actual manipulating existing features)
2. Data enhancement projects (projects that is scheduled for the coming year that will result in significant data change)
3. Database maintenance (compressions, reconciles and posts, versioning, schema changes, etc.)
4. Application administration and maintenance
5. Web services administration
6. Metadata updates
7. Data archival

The theme stewards and leads have respectfully pointed out, and hope it is acknowledged and accepted, that there is very grey area between theme maintenance and theme enhancement. For example if staff working on Land Cover update land cover classes that have seen significant change such as Mixed Grass Prairie, Prairie Pothole Wetlands or Aspen Forest is this maintenance or enhancement? Similarly if 200 new GPS positions in Yellowstone County are added to the Multi-State Control Point Database is this maintenance or enhancement. Finally, as the Administrative Boundary and Cadastral

themes are transitioned from their current geodatabase structure to the Esri Parcel Fabric, is this seen as maintenance or enhancement? Because of these esoteric and somewhat philosophical discussions, the FY 2015 MSDI work plan will not break out specifically the hours dedicated to maintenance verses those dedicated to enhancement projects. Proper maintenance should be assumed as a part of stewardship accountability and if there is evidence to the contrary it should be the job of MSL, acting in accordance with the advice of the MLIAC, to manage that situation. However major theme enhancement projects were submitted by theme stewards and leads are documented in the next section of the plan. Deducting the time spent on outreach, education and coordination MSDI stewards will dedicate slightly over 47,000 hours towards general maintenance and enhancement projects.

FY 2015 PROJECT PRIORITIES – ENHANCMENT PROJECTS SUMMARY TABLE

More expansive descriptions of some projects can be found in Appendix A

Theme	FY15 Proposed Project	LEAD
General MSDI		
	Increase Theme Steward/Lead meetings to 2 per year	MSL GeoInfo
	Research the ties between state efforts to establish open data portals, ArcGIS online and the current MSL digital atlas so MSDI data can be mashed up with complementary tabular data	MSL GeoInfo
Administrative Boundaries		
	Test Maintaining Administrative Boundaries in the Parcel Fabric	MSL GeoInfo
	Create better mapping options for tax increment finance districts	MSL GeoInfo
	New AGOL products for Administrative Boundaries	MSL GeoInfo
Cadastral		
	Design and develop and document maintenance workflows for CadNSDI_MT that will replace the current CadNSDI supplied by BLM – includes the formation of a PLSS Change Management Advisory Group	MSL GeoInfo
	Adjust Public Lands to CadNSDI_MT	MSL GeoInfo
Climate		
	Complete development, distribution and publication (to MSL data list for core climate datasets	University of Montana
	Implementation of presence on MSDI webpage and develop map gallery contributions	University of Montana
	Implementation of web/data services	University of Montana
	Develop new climate data products	University of Montana
Elevation		
	Develop a Montana Elevation strategic vision for an enhanced elevation data set	USGS
	Inventory enhanced elevation acquisitions and update NEEA for Montana and the Montana Elevation web map	USGS

	Solicit proposed enhanced elevation projects and update web map with them	USGS
Geodetic Control		
	Develop functional requirements for an application which would allow automated entry of control points into the MCPD by surveyors	MSL GeoInfo
	Work with FCDC, BLM and Idaho to complete standardized control point data collection and data entry requirements	MSL GeoInfo
	Increase outreach to surveying firms and encourage them to submit their GPS control points - work with Esri and FGDC to develop collection device to database point submission	MSL GeoInfo
Geographic Names		
	Provide the full GNIS database, including alternate names and secondary points to users	MSL GeoInfo
	Automated procedure to apply our local changes to above database and provide web and service access	MSL GeoInfo
Hydrologic Units		
	NRCS will continue the border harmonization with Canada project through 2015	NRCS
	Form a work group to discuss potential transition of this theme into hydrography. May result in products such as a watershed boundary mapping service that would facilitate the transition	MSL GeoInfo
Geology		
	Release a 1:100,000 non-edge matched geology web service	MBMG
	Start integration of multiple regional 1:100,000 databases into a unified edge matched SDE database (will not be completed this year)	MBMG
Hydrography		
	Data Quality Improvements	MSL GeoInfo
	Web editing (users submit revisions via web map)	MSL GeoInfo
	Work plan outlining when, where and how systematic, basin-by-basin editing will occur	MSL GeoInfo
Land Cover		
	Prepare a formal crosswalk between current ecological systems (the MSDI map unit) and Natureserve's National Land Cover Classification	MTNHP
	Using new whitebark pine mapping data revise the existing subalpine woodland and parkland class to more accurately represent forest vs. high-elevation grassland systems	MTNHP
	updated classifications that have seen significant change such as mixed grass prairie, agriculture, introduced riparian vegetation, prairie pothole wetlands and aspen forest and woodland	MTNHP

Imagery		
	No new data expected	MSL GeoInfo
Soils		
	NRCS will continue to work toward the completion of the SSURGO dataset in FY 15, as well as continue with ongoing maintenance.	NRCS
Structures and Addresses		
	Test automated data transfer from county to state using web feature services	MSL GeoInfo
	Obtain local addresses from the five remaining counties not represented by such data	MSL GeoInfo
Transportation		
	Work with 13 counties that have few or no address ranges on their roads - Dawson, Fergus , Glacier, Golden Valley, Judith Basin, McCone, Park, Petroleum, Powder River, Sheridan, Toole, Treasure and Wheatland	MSL GeoInfo
Wetlands		
	An estimated 210 quads of new wetland mapping will be completed in FY15	MTNHP

APPENDIX A – FY15 MSDI PROJECTS – ANCILLARY INFORMATION

General MSDI

MSL and SITSD will work closely to define what the mapping component should look like and do within the Governor's open data initiative. Many options exist and this could be a combination of multiple products such as Socrata, Esri and FME. Other open data portals report that the mapping functions are some of the most popular and this effort should insure that MSDI data is used as a foundation for linking disparate databases through common geographic elements.

Administrative Boundaries, Cadastral and Geodetic Control

Starting in November 2013 all three themes has been involved by necessity in a large project garnering national attention named Montana CATSPAW. After finally determining that federal maintenance of the PLSS was no longer meeting state and local needs, MSL recognized that some things needed to change. A proposal to migrate statewide PLSS to the Esri Parcel Fabric was adopted by Esri, the FGDC along with other federal, state, local and private stakeholders. This project will take up a large portion of the all three themes time but will result in better spatial accuracy of the PLSS and better vertical integration of all three themes. The Geodetic Control work we have done in the past has been a significant contributor and the database schema initially developed by Montana and changed in 2012 to meet Idaho needs appears that it will be adopted as a standardized collection template for federal collection efforts. While never listed in the FY14 work plan as an enhancement project significant work has been, and is being done on the geodetic control theme.

Climate – Climate will continue to mature in FY15 with particular attention paid to completing the development, maintenance, distribution, and publication (MSL portal) of core climate datasets. These datasets include historic climate station data (to present), gridded maximum temperature (1948-2012), gridded minimum temperature (1948-2012), gridded precipitation (1980-2012), Normalized Difference Vegetation Index (2000-present), Enhanced Vegetation Index (2000-present), and evapotranspiration (2000-present). Additional datasets may be added as they become available with particular attention in FY15 on summary datasets derived from the core climate dataset. Research and development will continue on new data products and improving existing products. These enhanced products are projected to be delivered in FY16 and FY17. Given the size of the climate datasets, web\data services will be investigated to improve client access. This includes integration into the Water Information System. An improved web presence is also targeted for FY15 with a goal of having climate added to the MSDI homepage, and the development of maps for the MSDI map gallery that are of interest to the general public.

Elevation – Over the past few years we have referenced the elevation theme in Montana as being in a maintenance phase. However, when you state this you are basically stating that you are maintaining the

10-meter DEMs. This is not really a true statement. The 10-meter DEMs are complete. We are now in a new phase of building an enhanced elevation dataset. If you look at it this way we are not maintaining yet we are building and basically starting over. We will need draft standards and requirements for elevation data in Montana. And we will need a strategic vision of how to budget for the collection of new elevation data (lidar) which could expend \$250,000 to \$1M per year for the next 10 years.

Geographic Names – MSL would like to be able to provide the full GNIS database, including alternate names and secondary points, to our users. We haven't pressed the USGS for a copy of the full database because we were hoping to wait for it to include the changes from the FY 2013 update project. Staff will meet with GNIS staff at the COGNA conference in Austin and ask that they provide us with the database. MSL will author an automated procedure to apply our local changes to this database and will provide access to it on our web site and as a service.

Geology – MBMG has migrated the existing 1:100,000 scale geology from 76 individual 'postage stamps' to a single geodatabase. Boundaries have not been erased between quadrangles and units have not been matched between quadrangles. MBMG intends to release it as a map service but have some work to do yet migrating - some of the symbology, etc. MBMG hope to have this up and running in the next few months. For the past year or so, work has been concentrated on integrating all of these 'postage stamps' into a single unified SDE geodatabase. The Bureau has committed to this effort/process and sees great benefit for many projects.

Hydrography – A work plan will be put together that outlines when, where, and how MSL will be editing the hydrography dataset. This plan will prioritize which basins are queued for systematic editing and provide flexibility to accommodate agency needs.

Hydrologic Units – The hydrologic unit border harmonization with Canada will be ongoing through 2014 and 2015. These updates will be incorporated into the NHD as they are certified. There is still a need for continued education and outreach to professionals using the NHD to ensure use of the integrated WBD. Although the WBD's are integrated into the NHD there remains a need to provide some users with a stand-alone version of the watershed boundaries for the 8,10 and 12 digit HUCS. If these needs can be met through the MSL Water Information System Program we can investigate transition of this theme out MSDI status and incorporate it into MSDI Hydrography.

Land Cover – MTNHP is working with NatureServe on updates to the National Land Cover Classification Standard at the "macrogroup" level. The NVC has been adopted by the FGDC as a standard for all federally funded vegetation classification, but pending completion of the standard at a mappable scale (i.e., macrogroups), it has not yet been adopted as a mapping standard. In anticipation of the NVC macrogroups being completed, we will prepare a formal crosswalk between current ecological systems (the MSDI map unit) and macrogroups, and, for each one, will evaluate what changes, if any, will be needed to produce a macrogroup-based map legend. We will also update several land cover classes in the current MSDI classification that have seen significant changes since the layer was created: Mixed

Grass Prairie; Agriculture; Introduced Riparian Vegetation; Prairie Pothole Wetlands; and Aspen Forest and Woodland. All these systems have been identified by partners (USFWS, USFS, USDA, BLM, MT-Ag, MT-DEQ) as needing to be updated to meet business purposes. We will be using project funding from the Forest Service to conduct field surveys to support whitebark pine mapping in the Lewis and Clark and Helena National Forests. We have completed whitebark pine mapping for the Beaverhead-Deerlodge Forest and have used project funds for data collection in the Gallatin and Custer National Forests. We expect to have mapping of whitebark pine in these 5 forests sufficiently complete to revise the existing Subalpine Woodland and Parkland class to more accurately represented forested vs high-elevation grassland systems.

Imagery – No change to the state’s imagery holdings or imagery services are anticipated for FY 15.

Soils- NRCS continues to have full-time staff devoted to soil mapping, digitizing, correlation and the associated tasks with completing the SSURGO dataset for the State of Montana. The NRCS has 7 full time staff working on initial soil surveys, 5 full time staff involved in updating existing soil surveys, an assistance state soil scientist who oversees their work and a natural resource analyst housed at MSL. Statewide updates to the SSURGO were provided to MSL in January 2014 and have been incorporated into a web services application for download and distribution. Technical support for use of the SSURGO data is available from the NRCS staff representative stationed at the Montana State Library.

Structures/Addresses - Currently the Structures Framework has addresses for over 50 local governments. As the Framework moves from acquisition of local government data to regular maintenance, the ability to obtain regular updates is a challenge. With the increasing adoption of ArcGIS Online (AGOL) at the local government level, MSL would like to test using AGOL hosted feature services of county addresses as a means to update the Structures Framework. MSL has successfully tested a Python script for updating an AGOL feature service with a dataset that resides on a local computer, proving a local government could easily keep a feature service hosted in the cloud up-to-date. The next step is for MSL to test using the AGOL feature service of county addresses to update the Structures Framework. MSL can provide assistance to a local government to help set up the AGOL feature service and the Python scripted update process.

Transportation – MSL continues lead stewardship on framework transportation, integrating MDT data with data from counties that contains addresses and in some cases enhanced road segment attributes. We will explore opportunities to work with 13 counties that have few or no addresses; Dawson, Fergus, Glacier, Golden Valley, Judith Basin, McCone, Park, Petroleum, Powder River, Sheridan, Toole, Treasure and Wheatland. The data schema has been streamlined and the attributes reviewed and edited to correct many deficiencies.

Wetlands – An estimated 210 quads of new wetland mapping will be completed for FY15 comprising 5,700 hours under partner contracts. We are seeking partner funding to complete the addition of

hydrogeomorphic descriptors to existing wetland mapping. Estimated maintenance hours for FY15 are 1,020 hours.

APPENDIX B – FY14 MSDI PROJECT STATUS

Theme	FY13 Proposed Project	Status
General MSDI		
	MSDI ARCGIS MAP GALLERY	Complete
	WEB ENHANCEMENTS PHASE 2	Complete
	MSL DATA BUNDLER	Complete
Admin Boundaries		
	CENSUS PILOT/BOUNDARY ADJUST	*In Progress – see # 1 below
	PRECINCT MAPPING	Not Started
	WATER/SEWER DISTRICTS	Research Phase
Cadastral		
	ADJUST CADASTRAL & PUBLIC LANDS TO NEW GCDB	*In Progress – see #1 below
	STATE TRUST LAND COMMON OPERATING	In Progress
	FEDERAL LAND ATTRIBUTIOIN	*In Progress – see #2 below
Elevation		
	UPDATE LIDAR PROJECT INVENTORY	Complete
Geographic Names		
	IMPROVE UPDATE, WEB SERVICES AND DISTRIBUTION	*Not Started – see #3 below
Geology		
	DEVELOPMENT & PRODUCTION OF GEODATABASES	*In Progress – please refer to page 8 (Geology)
	COMPLETE GEOLOGY DATA SERVICE	Complete
Hydrography		
	DATA QUALITY IMPROVEMENTS	*On going – see #4 below
	TRANSPARENT EDITING AND MAITENANCE WORKFLOW	*Complete and ongoing – see #5 below
	FEATURE DELTA ANALYSIS	*On going – see #4b below
Land Cover		
	PUBLISH INITIAL 2014 LAND COVER WITH REVISIONS TO PERMANENT SNOW AND ICE COVER CLASSES, RED/DEAD AND 2012/13 BURNED AREAS; REVISE 2014 LAND COVER BASED ON MULTIPLE FACTORS	Complete
Imagery		
	PROCESS 2013 NAIP FOR DOWLOAD AND WEB SERVICES	95% complete – should be up May 2014
Soils		
	UPDATE WEB PRESENCE WITH ACCESS STANDARD INTERPRETATIONS USING WEB SERVICES; DATA ARCHIVAL	Complete
Structures		
	NEW DATA AND ETL ROUTINES TO FRAMEWORK	Complete
Wetlands		

	NEW WETLANDS QUAD MAPPING – 500 QUADS	*In Progress – see #6 below
	HYDROGEOMORPHIC DESCRIPTORS	*Not Started – see #7 below

Supplemental Comments and Explanations:

1. Adjustment of administrative boundaries and the cadastral tax parcels could not happen until MSL received a clean copy of CadNSDI 2 from BLM. Staff spent an estimated 500 hours working with BLM’s contractor Premier Data, doing QA/QC on CadNSDI 2 that BLM was not able to accomplish. We received a relatively clean version in March 2014 although we have discovered subsequent errors on the Canadian Boundary. Parcel adjustment has begun and we estimate it will be 50% complete by June 30, 2014. A draft version of county boundaries has been finished and is being inspected in house. Many of the FY14 hours estimated for adjustment have been spent developing the Montana CATSPAW project that will move CadNSDI to CadNSDI_MT and out of federal management. MSL Administrative Boundary, Cadastral, Geodetic Control staff, along with the State GIS Coordinator, have easily spent an additional 800 hours working to move data into the Esri parcel fabric and developing the policy and procedural documentation that accompany moving the CadNSDI Montana (PLSS) database out of federal and into state hands for maintenance and enhancement.
2. While we still have little federal land attribution extensive work on the Public Lands Database was accomplished to make it as current as possible. This data is used as the base for many map applications and has been published as a map service
3. The USGS has not completed the edits that were submitted by Montana. This has been rescheduled as a 2015 project
4. Data quality improvements are focused on 1. User-submitted requests, and 2. Systematic basin-by-basin (8-digit HUC) revisions.
 - a. As of April 2014, approximately 600 hydrography features have been revised based on user-submitted requests. Examples include feature type (FType) and feature code (Fcode) updates, name updates, aligning feature geometry with NAIP, fixing disconnected streams, and digitizing new lakes, ponds, and flowlines. There are approximately another 300 revisions queued at this time.
 - b. Systematic basin-by-basin revisions will begin in the Beaverhead and Musselshell the end of FY14 and continue through FY15. The majority of FY14 time has been spent identifying, testing, and documenting how we will systematically cleanup basins throughout the State. The general approach is to leverage existing datasets, such as the Wetlands Framework and LIDAR-derived hydrography, by using them to identify where revisions are needed (feature delta analysis) and importing geometry and attributes where feasible.

5. The *Montana Hydrography Dataset Stewardship and Edit Submission Guide* has been drafted, reviewed by the Hydrography Working Group, and will be published to the web and put into practice by the end of FY14. The purpose of this document is to provide guidelines and a set of procedures for maintaining Montana's Hydrography Dataset. The document provides an overview of the stewardship process; describes working groups and guiding agencies; details options for submitting NHD revisions; discusses how users can track the status of submitted edits; describes sources of data and their update frequency; provides a form for submitting hydrography revisions; and lists best practices and FAQs. A simple ArcGIS online application, the *Montana Hydrography Dataset Edit Request Viewer*, has been developed and presented to the Hydrography Working Group and will be released by the end of FY14. Users can view "Pending," "In Progress," and "Completed" hydrography edit requests and click on a feature to see a description of the revision. Contributors may also consume the map service or obtain a copy of the geodatabase from MSL to review edit requests in desktop GIS software. Future projects include the exploration of web editing options, which could allow users to submit hydrography revisions through the online viewer.
6. This project is in progress. By June 30, an estimated 350 quads will be completed. Unexpected staff turnover and reassignment contributed to delays in map completion.
7. This project is not started and not scheduled for completion. Adequate funding to assign these descriptors is unavailable.