

# Meta-DACUM Job/Occupation Analysis for GIS & Remote Sensing

(Technicians-4, Specialists-4, Analysts-1 & Senior Analysts-1)

Meta-Knowledge % of panels, count, G-IS R-S	Meta-Skills % of panels, count, G-IS R-S	Meta-Behaviors % of panels, count, G-IS R-S
Accuracy & precision 30% 4 GR	Cartography 100% 18 GR	Analytical, logical 90% 12 GR
CAD, Engineering drawings 40% 4 GR	Communication 70% 8 GR	Accept criticism 20% 2 GR
Computer 60% 12 GR	Conflict Resolution 20% 3 GR	Adaptable, flexible 70% 9 GR
Computer networks, servers 40% 7 GR	Cooperative, people skills 40% 8 GR	Common sense 40% 4 GR
Coordinate systems, projections 80% 12 GR	Critical thinking 80% 10 GR	Creative 50% 5 GR
Current events 10% 1 G	Document interpretation 10% 2 G	Dedicated, persistent 50% 10 GR
Database technology 50% 7 G	Equipment operation, maintenance 30% 3 GR	Detail orientated 100% 11 GR
File formats, transfers, conversions 40% 9 GR	Follow procedures 40% 5 GR	Diplomatic, discretion 30% 3 GR
Geography 40% 7 GR	Keyboarding 30% 3 G	Dress, etiquette, hygiene 20% 3 G
Geoprocessing, modeling 20% 4 G	Leadership 30% 3 GR	Ethical, respectful 50% 5 GR
Geometry 20% 2 G	Map reading 50% 5 GR	Focused 40% 6 GR
GIS 30% 4 GR	Multi-tasking 60% 6 GR	Honesty, integrity 10% 3 G
GPS, surveying, geotagging 80% 16 GR	Organizational 90% 10 GR	Inquisitive 10% 1 R
Industry sector applications 30% 5 GR	Presentation, oral communication 80% 12 GR	Open minded 20% 3 GR
Jargon, acronyms 20% 2 G	Problem Solving 90% 10 GR	Patience 50% 5 GR
Legal descriptions 40% 7 GR	Professional development 30% 4 GR	Positive attitude 50% 8 GR
Legal requirements 20% 3 G	Research 30% 4 G	Proactive, initiative 60% 10 GR
Mathematics, algebra 90% 10 GR	Spatial Thinking 40% 4 GR	Professionalism 20% 2 G
Photogrammetry, remote sensing 80% 25 GR	Team Player, interpersonal skills 90% 17 GR	Reliable, punctual 50% 5 G
Physics, Chemistry 30% 4 GR	Time management 70% 7 GR	Resourceful 50% 5 GR
Programming, scripting 90% 18 GR	Troubleshooting 40% 4 GR	Respectful 30% 3 GR
Queries & analysis 50% 9 GR	Visual interpretation 20% 3 GR	Self-motivated 100% 17 GR
Raster / Vector 20% 2 GR	Web design & development 20% 4 G	Sense of humor 30% 3 GR
Scale, resolution 50% 5 GR	Writing 80% 14 GR	Visionary 10% 2 G
Software 50% 8 GR		Willingness to learn 70% 10 GR
Standards (client, industry) 50% 11 GR		Work long hours 20% 2 R
Statistics, probability 80% 12 GR		Work under Pressure 20% 4 GR
Trigonometry, calculus 20% 3 GR		
Units of measurement, conversions 20% 3 G		

## Meta-Tools, Equipment & Supplies: % of panels, count, G-IS R-S

Aerial imagery 50% 7 GR	GPS software 40% 5 G	Project management software 10% 2 G
Binoculars 10% 1 R	Graphic software 80% 15 GR	Scanner 70% 8 GR
Calculator 40% 4 G	Image process/analysis software 80% 16 GR	Security software 10% 1 G
Camera 60% 6 GR	Internet, Cloud, FTP 60% 8 G	Sensors, photogrammetry/RS 10% 6 R
Compass 20% 2 GR	Laser range finder 20% 2 GR	Server 40% 6 GR
Compression software 20% 2 G	Lidar software 20% 4 GR	Stereoscopes 20% 2 R
Computer 80% 12 GR	Map viewing software 20% 2 GR	Tape: measuring, flagging 20% 4 GR
CAD software 50% 9 GR	Office software 70% 9 GR	Tool box 10% 1 G
Digitizer 10% 1 G	Office supplies & equipment 50% 7 GR	Topographic maps 10% 1 R
GIS data 20% 3 GR	Phone, PDA 60% 8 GR	Vehicle 40% 4 GR
GIS extensions 50% 10 GR	Plotter 90% 9 GR	Web design software 10% 2 G
GIS software 100% 17 GR	Printer 50% 5 GR	
GPS receivers 90% 12 GR	Programming software 20% 5 GR	

## DACUM Panels

SLC, Salt Lake Community College, Salt Lake City, UT - **GIS Specialist** - March 27-28, 2014, 6 Specialists

USG, U.S. Geospatial Intelligence Foundation, Herndon, VA - **Geospatial Analyst** - October 22-23, 2013, 9 Analysts

DEN, Metro State College, Denver, CO - **Remote Sensing Specialist** - September 14-15, 2011, 8 Specialists

MIL, ASPRS National Conference, Milwaukee, WI - **Remote Sensing Specialist** - May 1-2, 2011, 6 Specialists

SAC, Mission College, Santa Clara, CA - **Remote Sensing Specialist** - August 20 - 21, 2009, 5 Specialists

ARC, American River College, Sacramento, CA - **Senior GIS Analyst** - June 4-5, 2009, 8 Analysts

GSC, Gainesville State College, Atlanta, GA - **GIS Technician** - January 16-17, 2009, 12 Technicians

LLC, Lake Land College, Mattoon, IL - **GIS Technician** - November 19-20, 2008, 12 Technicians

GRC, Green River Community College - **GIS Technician** - June 12, 2007, 5 Technicians

SDM, San Diego Mesa College, San Diego, CA - **GIS Technician** - January 13-14, 2005, 11 Technicians

Facilitator: John Johnson  
GeoTech Center

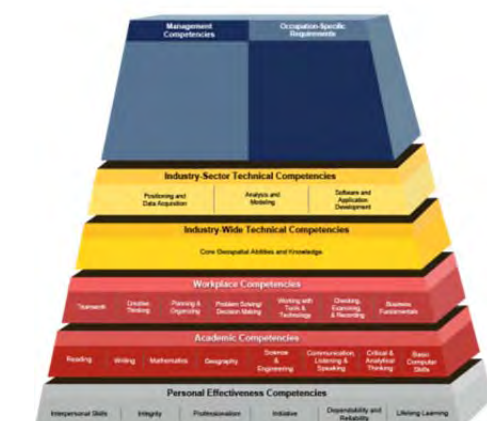
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# Meta-DACUM Research Chart for GIS & Remote Sensing (Technicians, Specialists, Analysts & Senior Analysts)

June, 2014

Meta-Duties		Meta-Tasks: % of panels. # of tasks. G-IS R-S															
<b>A</b>	<b>MANAGE DATA</b>	A1 Define data requirements: 60% 7 GR	A2 Research data sources: 90% 17 GR	A3 Acquire data: 90% 14 GR	A4 Connect to data feeds: 30% 3 G	A5 Import & export data: 50% 9 GR	A6 Order & purchase data: 60% 6 GR	A7 Organize data: 80% 15 GR	A8 Backup & restore data: 70% 13 GR	A9 Convert / reformat data: 90% 18 GR	A10 Join & relate tables: 30% 4 G	A11 Create & edit feature behavior (topology, subtypes, domains): 40% 5 G	A12 Design & edit databases: 70% 14 GR	A13 Assign user permissions: 40% 5 GR			
<b>A</b>	<b>MANAGE DATA con't...</b>	DUTY: Cluster of related tasks; Large area of work described in performance terms.															
<b>B</b>	<b>GENERATE DATA</b>	B1 Collect field attribute data: 70% 8 G	B2 Conduct surveys & questionnaire: 40% 5 G	B3 Capture crowd-source data: 10% 1 G	B4 Plan field missions: 50% 16 GR	B5 Collect ground control points: 30% 8 R	B6 Digitize data: 80% 9 GR	B7 Geocode addresses: 70% 8 G	B8 Scan non-digital data: 60% 6 GR	B9 Create/edit vector data: 80% 13 GR	B10 Create/edit attribute data: 50% 10 G	B11 Create / edit metadata: 100% 13 GR	B12 Create photogrammetric data: 10% 3 R	B13 Create LIDAR based products: 30% 4 GR	B14 COGO legal descriptions: 40% 4 G		
<b>C</b>	<b>PROCESS DATA</b>	C1 Geo-reference & rectify data: 80% 9 GR	C2 Define spatial reference: 20% 2 G	C3 Reproject & transform data: 60% 7 GR	C4 Conduct image classification: 40% 16 GR	C5 Evaluate accuracy of image classification: 60% 6 R		C6 Mosaic / co-register images: 40% 5 GR	C7 Sample / resample image data: 30% 4 GR	C8 Conduct atmospheric / radiometric calibration: 20% 4 R		C9 Conduct image enhancement: 30% 5 R	C10 Conduct visual interpretation of imagery: 30% 3 GR		C11 Conduct geoprocessing : 60% 9 GR		
<b>C</b>	<b>PROCESS DATA con't...</b>	C12 Orthorectify photogrammetric data: 30% 3 R		C13 Process / post-process GPS data: 40% 4 G	C14 Normalize data structure: 20% 2 G	TASK: Smallest unit of job activity with a meaningful outcome; Results in a product, service or decision; Can be observed and measured; Has a definite beginning & ending; Is "crystal clear"; Requires specific knowledge, skills, behaviors, tools & equipment.											
<b>D</b>	<b>ANALYZE DATA</b>	D1 Conduct queries: 40% 7 GR	D2 Conduct network analysis: 50% 9 G	D3 Conduct statistical analysis: 70% 8 GR	D4 Conduct Proximity analysis: 20% 2 GR	D5 Conduct spatial analysis: 40% 10 GR	D6 Conduct quantitative analysis: 40% 7 GR	D7 Conduct change detection: 30% 4 R	D8 Conduct view-shed analysis: 20% 2 GR	D9 Perform feature extraction / image segmentation: 40% 7 GR		D10 Conduct scenario analysis: 20% 2 R	D11 Create & execute models: 60% 11 GR				
<b>E</b>	<b>MANAGE SOFTWARE &amp; HARDWARE</b>	E1 Install & upgrade software: 50% 5 GR	E2 Create scripts & custom tools: 80% 11 GR	E3 Evaluate software & hardware: 40% 5 G	E4 Configure & upgrade servers: 20% 4 G	E5 Optimize database performance: 30% 5 G	E6 Order materials & supplies: 30% 4 G	E7 Maintain equipment & supplies: 50% 10 GR	E8 Provide technical support: 60% 7 G	E9 Create help files & user guides: 20% 3 G	STEPS: Specific elements or activities required to perform a TASK.						
<b>F</b>	<b>MANAGE PROJECTS</b>	F1 Coordinate project activities: 60% 12 GR	F2 Clarify scope goals & deliverables: 70% 11 GR	F3 Evaluate project feasibility: 30% 5 GR	F4 Develop project timeline & schedule: 40% 5 GR		F5 Define project study area: 50% 6 GR	F6 Allocate project resources: 30% 5 GR	F7 Evaluate project status: 50% 13 GR	F8 Develop policy, standards & procedures: 50% 11 GR		F9 Document / record methodology & procedures: 70% 7 GR		F10 Prepare cost estimates and budgets: 50% 6 GR			
<b>F</b>	<b>MANAGE PROJECTS con't...</b>	F11 Evaluate and supervise project personnel: 30% 4 GR		F12 Prioritize & streamline project workflows: 40% 5 GR		F13 Contribute to company strategic plan: 20% 2 GR		F14 Participate in hiring personnel: 50% 6 GR		F15 Write proposals & grant applications: 60% 7 GR		F16 Create & implement disaster recovery plan: 10% 2 G					
<b>G</b>	<b>GENERATE PRODUCTS &amp; SERVICES...</b>	G1 Design & create maps: 100% 24 GR	G2 Design & create web maps: 30% 3 G	G3 Create graphics: 30% 4 GR	G4 Create animations, fly-throughs and videos: 50% 7 GR		G5 Create reports: 90% 13 GR	G6 Create tables, charts & graphs: 60% 8 GR	G7 Create mailing lists and labels: 20% 2 G	G8 Develop presentations: 40% 4 GR	G9 Conduct oral presentations: 60% 10 GR	G10 Prepare documents & data: 50% 12 GR	G11 Publish digital information: 90% 16 GR		G12 Integrate data: 30% 5 R		
<b>G</b>	<b>GENERATE PRODUCTS &amp; SERVICES con't</b>	G13 Develop software applications & web services: 30% 8 G		G14 Develop and maintain websites: 30% 4 GR		DACUM PHILOSOPHY: Expert workers can describe their job more accurately than anyone else: An effective way to define a job is to precisely describe the tasks that expert workers perform; All tasks, in order to be performed correctly, require certain knowledge, skills, tools and worker behaviors (enablers).											
<b>H</b>	<b>PROFESSIONAL DEVELOPMENT</b>	H1 Interact & communicate with co-workers: 30% 4 GR		H2 Conduct self-assessment & plan career: 40% 8 GR		H3 Participate in conferences, seminars & workshops: 100% 18 GR		H4 Conduct training seminars and workshops: 90% 14 GR		H5 Develop training program & materials: 50% 5 GR		H6 Attend professional training classes & workshops: 80% 11 GR		H7 Pursue advance degrees & certificates: 50% 6 GR			
<b>H</b>	<b>PROFESSIONAL DEVELOPMENT con't...</b>	H8 Acquire & maintain professional certification(s): 80% 9 GR		H9 Promote and represent the field of geospatial technology: 40% 7 G		H10 Participate in community & professional outreach activities: 50% 8 GR		H11 Read job related information: 60% 10 GR		H12 Participate in mentoring programs: 80% 10 GR		H13 Publish professional articles: 40% 4 GR		H14 Network professionally : 50% 8 GR		H15 Participate on committees: 30% 4 GR	H16 Research technology trends: 50% 5 GR

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A1 Define data requirements</b>			60% of panels		<b>A MANAGE DATA</b>
Define data attributes	GIS	2014	SLC	6	Plan Projects
Define attributes	GIS	2013	USG	9	Capture Data
Define data requirements (e.g. domains)	GIS	2009	GSC	12	Gather Data
Define Data Needs	GIS	2009	ARC	8	Develop solutions
Document Data GAPS	GIS	2009	ARC	0	Develop solutions
Define data requirements (C)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Determine data specifications (goals, collection requirements & parameters)	RS	2011	DEN	8	Develop Project Plan
7 tasks			6 panels	54 members	
<b>A2 Research data sources</b>			90% of panels		<b>A MANAGE DATA</b>
Perform data search	GIS	2013	USG	9	Capture Data
Identify data sources/resources	GIS	2009	GSC	12	Gather Data
Identify Existing Data	GIS	2009	ARC	8	Develop solutions
Research existing geospatial data	GIS	2008	LLC	12	Collect / Create Data
Research Data Sources	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Research available data (C )	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Determine data compatibility (e.g. projections) (E,C)	GIS	2005	SDM	0	Create / Acquire GIS Data * (3)
Research data sources *	RS	2011	DEN	8	Develop Project Plan
Conduct background research	RS	2011	MIL	6	Project Planning
Identify data sources (needed & available)	RS	2011	MIL	0	Project Planning
Query hardcopy resources (archives) *	RS	2011	MIL	0	Acquire Data
Query on-line resources (archives, private...) *	RS	2011	MIL	0	Acquire Data
Search web-based image providers	RS	2009	SAC	5	Acquire Data
Select appropriate data	RS	2009	SAC	0	Acquire Data
Select appropriate data type based on platform/resolution (spectral, spatial, radiometr	RS	2009	SAC	0	Manage Projects
Inventory available imagery using web resources	RS	2009	SAC	0	Manage Projects
Inventory local knowledge of study area	RS	2009	SAC	0	Validate & Ground – Truth Data
17 tasks			9 panels	76 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A3 Acquire data</b>			90% of panels		<b>A MANAGE DATA</b>
Obtain outside data (legal docs)	GIS	2014	SLC	6	Acquire Data
Acquire free data	GIS	2013	USG	9	Capture Data
Acquire existing data (e.g. digital, hard copy)	GIS	2009	GSC	12	Gather Data
Define data collection methods (e.g. GPS, air photo)	GIS	2009	GSC	0	Gather Data
Acquire Existing Data (aerial, RS, download)	GIS	2009	ARC	8	Develop Data
Extract Data (mining)	GIS	2009	ARC	0	Develop Data
Acquire existing geospatial data	GIS	2008	LLC	12	Collect / Create Data
Acquire Data	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Download data *	RS	2011	MIL	6	Acquire Data
Download data *	RS	2011	MIL	0	Acquire Data
Select data type(s) based on scope of work	RS	2011	MIL	0	Acquire Data
Respond to data requests *	RS	2011	DEN	8	Manage Data
Download / decompress files	RS	2009	SAC	5	Acquire Data
Select appropriate output format	RS	2009	SAC	0	Acquire Data
14 tasks			9 panels	71 members	
<b>A4 Connect to data feeds</b>			30% of panels		<b>A MANAGE DATA</b>
Connect to real time data sources	GIS	2014	SLC	6	Acquire Data
Connect to live data feeds (web services, crowd sourcing)	GIS	2013	USG	9	Capture Data
Connect to external data sources (e.g. odbc, GIS servers)	GIS	2009	GSC	12	Gather Data
3 tasks			3 panels	27 members	
<b>A5 Import &amp; export data</b>			50% of panels		<b>A MANAGE DATA</b>
Export final data (DTMs, raster vector, tables, CAD, elevation data)	GIS	2014	SLC	6	Produce Deliverables
Export raw data	GIS	2014	SLC	0	Acquire Data
Upload project parameters	GIS	2014	SLC	0	Acquire Data
Export GIS data	GIS	2013	USG	9	Produce Deliverables
Export data structures	GIS	2008	LLC	12	Disseminate Data
Import CAD files (82%)	GIS	2008	LLC	0	Modify Data
Import data	RS	2011	MIL	6	Manage Data
Import image / data	RS	2009	SAC	5	Prepare Data
Export data (multiple formats)	RS	2009	SAC	0	Develop End Products
9 tasks			5 panels	38 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A6 Order &amp; purchase data</b>			60% of panels		<b>A MANAGE DATA</b>
Purchase data	GIS	2013	USG	9	Capture Data
Procure New Data (aerial, lidar)	GIS	2009	ARC	8	Develop Data
Purchase new data	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Order data (parameters: capture, task, archival, ancillary) *	RS	2011	DEN	8	E Acquire Data
Order data *	RS	2011	MIL	6	Acquire Data
Contract image acquisition with remote sensing data providers	RS	2009	SAC	5	Acquire Data
6 tasks			6 panels	47 members	
<b>A7 Organize data</b>			80% of panels		<b>A MANAGE DATA</b>
Develop & create data structure (naming, conventions)	GIS	2014	SLC	6	Plan Projects
Organize digital data (e.g. data library)	GIS	2009	GSC	12	Manage Data
Organize non-digital data	GIS	2009	GSC	0	Manage Data
Organize Data Framework	GIS	2009	ARC	8	Manage Data / Information
Categorize data	GIS	2008	LLC	12	Modify Data
Establish file structure (Adv.)	GIS	2008	LLC	0	Maintain Data
Organize files according to Company procedures	GIS	2008	LLC	0	Perform Administrative Responsibilities
Organize file structure (e.g. create directories, perform data & directory housekeeping)	GIS	2005	SDM	11	Manage GIS Data
Organize data (rename, index volumes) *	RS	2011	MIL	6	Manage Data
Setup file structure	RS	2011	DEN	8	Manage Data
Setup project environment	RS	2011	DEN	0	Produce Data
Maintain image library *	RS	2011	DEN	0	Manage Data
Maintain geospatial database(s) *	RS	2011	DEN	0	Manage Data
Organize & archive validation data	RS	2009	SAC	5	Validate & Ground – Truth Data
Create data / file structure	RS	2009	SAC	0	Acquire Data
15 tasks			8 panels	68 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A8 Backup &amp; restore data</b>			70% of panels		<b>A MANAGE DATA</b>
Backup & archive data	GIS	2014	SLC	6	Process Data
Develop Back Up Plan	GIS	2009	ARC	8	Manage Data / Information
Implement Backup Plan	GIS	2009	ARC	0	Manage Data / Information
Create Archive Structure	GIS	2009	ARC	0	Manage Data / Information
Archive Data	GIS	2009	ARC	0	Manage Data / Information
Archive data	GIS	2009	GSC	12	Manage Data
Back-up Data	GIS	2008	LLC	12	Maintain Data
Archive / retrieve data (E,C)	GIS	2005	SDM	11	Manage GIS Data
Backup / restore data (E,C)	GIS	2005	SDM	0	Manage GIS Data
Create backup (fail-over) *	RS	2011	DEN	8	Manage Data
Archive data *	RS	2011	DEN	0	Manage Data
Backup / Restore data to / from local archive *	RS	2011	MIL	6	Manage Data
Backup / restore data to / from off-site archive	RS	2011	MIL	0	Manage Systems
13 tasks			7 panels	63 members	
<b>A9 Convert / reformat data</b>			90% of panels		<b>A MANAGE DATA</b>
Convert data (GPX, KML, CSV, SHP...)	GIS	2013	USG	9	Manage Data
Convert Data (AutoCAD, reformat, text)	GIS	2009	ARC	8	Develop Data
Convert Surveyor Coordinates (COGO)	GIS	2009	ARC	0	Develop Data
Translate Data Format	GIS	2009	ARC	0	Maintain Data
Perform data conversions	GIS	2009	GSC	12	Process Data
Convert data between formats (e.g. KML, XML, RSS) (Adv.)	GIS	2008	LLC	12	Modify Data
Convert Data Source (e.g. Auto-CAD)	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Convert between data formats (C)	GIS	2005	SDM	11	Maintain GIS Data* (1)
Perform data conversions (between formats) (E, C)	GIS	2005	SDM	0	Create / Acquire GIS Data * (3)
Format data (compression, interleave) *	RS	2011	DEN	8	Produce Data
Migrate data to new environment	RS	2011	DEN	0	Manage Data
Convert data format (raster/vector) *	RS	2011	MIL	6	Manage Data
Output LAS (Lidar) files	RS	2011	MIL	0	Process Data
Convert waveform data to points (LIDAR)	RS	2011	MIL	0	Process Data
Reformat data *	RS	2011	MIL	0	Manage Data
Convert rasters to vectors	RS	2009	SAC	5	Prepare Data
Convert vectors to rasters	RS	2009	SAC	0	Prepare Data
Reformat image / data type	RS	2009	SAC	0	Prepare Data
18 tasks			9 panels	76 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A10 Join &amp; relate tables</b>			30% of panels		<b>A MANAGE DATA</b>
Join data (SQL)	GIS	2014	SLC	6	Analyze Data
Relate Data	GIS	2014	SLC	0	Analyze Data
Join tables (e.g. link, join, relate)	GIS	2009	GSC	12	Manage Data
Join non-spatial data	GIS	2008	LLC	12	Modify Data
4 tasks			3 panels	30 members	
<b>A11 Create &amp; edit feature behavior (topology, subtypes, domains)</b>			40% of panels		<b>A MANAGE DATA</b>
Create / repair topology	GIS	2013	USG	9	Analyze Data
Create Topology (clean, build)	GIS	2009	ARC	8	Develop Data
Create topology for related features (64%) (Adv.)	GIS	2008	LLC	12	Modify Data
Define feature behaviors (e.g. sub-types & domains) (C )	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Define feature relationships / behaviors (relate tables, relationship classes) (C )	GIS	2005	SDM	0	Create / Acquire GIS Data * (3)
5 tasks			4 panels	40 members	
<b>A12 Design &amp; edit databases</b>			70% of panels		<b>A MANAGE DATA</b>
Create spatial database (SQL, Geodatabase)	GIS	2014	SLC	6	Plan Projects
Edit database schema	GIS	2013	USG	9	Manage Data
Create Geodatabases (set environments)	GIS	2013	USG	0	Manage Data
Load data into databases	GIS	2013	USG	0	Manage Data
Design Database Structures	GIS	2009	ARC	8	Manage Data / Information
Evaluate Existing Database Structures	GIS	2009	ARC	0	Manage Data / Information
Load Data into Database	GIS	2009	ARC	0	Maintain Data
Define Database Standards	GIS	2009	ARC	0	Develop Data
Design Database Structure	GIS	2007	GRC	5	Create/Maintain/Manage Geographic Data Sets
Create Database Tables	GIS	2007	GRC	0	Manage Geographic Data Sets
Develop databases (e.g. define geometry & attributes)(C )	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Create data storage structure (geodatabase, working directory, topology rules)	RS	2011	MIL	6	Manage Data
Create templates (databases, data attributes, work flow)	RS	2011	DEN	8	Develop Project Plan
Create geospatial database(s)	RS	2011	DEN	0	Manage Data
14 tasks			7 panels	53 members	
<b>A13 Assign user permissions</b>			40% of panels		<b>A MANAGE DATA</b>
Configure user permissions	GIS	2014	SLC	6	Administer Server
Assign Data Stewardship	GIS	2009	ARC	8	Maintain Data
Assign data/database permissions	GIS	2005	SDM	11	Manage GIS Data
Establish data custodianship (C)	GIS	2005	SDM	0	Manage GIS Data
Assign access permissions	RS	2011	MIL	6	Manage Data
5 tasks			4 panels	31 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A14 Research &amp; implement security protocols</b>			20% of panels		<b>A MANAGE DATA</b>
Implement Security Standards	GIS	2009	ARC	8	Manage Data / Information
Research Security Protocols	GIS	2009	ARC	0	Manage Data / Information
Administer security protocols	RS	2011	DEN	8	Manage hardware and software
Ensure adequate security for product dissemination	RS	2011	DEN	0	Disseminate Products
4 tasks			2 panels	16 members	
<b>A15 Evaluate data quality</b>			60% of panels		<b>A MANAGE DATA</b>
Quality assurance / quality control (QA/QC) data	GIS	2013	USG	9	Manage Data
Evaluate Data Quality (spatial accuracy, currency)	GIS	2009	ARC	8	Maintain Data
Quality Assurance / Quality Control (Adv.) (Maintain data)	GIS	2008	LLC	12	Maintain Data
Ensure Data Quality (Quality Control, Quality Assurance)	GIS	2007	GRC	5	Manage Geographic Data Sets
QA/QC data (E,C) (Create/Acquire GIS Data)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
QA/QC data (E,C) (Maintain GIS Data)	GIS	2005	SDM	0	Maintain GIS Data* (1)
Perform quality control on data acquired	RS	2011	DEN	8	E Acquire Data
Perform image quality assessment	RS	2011	DEN	0	Assure Quality
8 tasks			6 panels	53 members	
<b>A16 Validate data</b>			90% of panels		<b>A MANAGE DATA</b>
Validate data integrity (sampling, projections)	GIS	2014	SLC	6	Process Data
Reconcile data discrepancies	GIS	2013	USG	9	Manage Data
Create Data Quality Control Plan (accuracy, integrity)	GIS	2009	ARC	8	Manage Data / Information
Validate spatial data (e.g. topology, build, verification)	GIS	2009	GSC	12	Process Data
Validate tabular data	GIS	2009	GSC	0	Process Data
Evaluate spatial data accuracy	GIS	2009	GSC	0	Process Data
Validate data changes (multi-editor environ.) (91%) (Adv.)	GIS	2008	LLC	12	Maintain Data
Conduct Ground Truthing	GIS	2007	GRC	5	Manage Geographic Data Sets
Assess absolute accuracy and precision	RS	2011	DEN	8	Assure Quality
Assess relative accuracy and precision	RS	2011	DEN	0	Assure Quality
Enforce topology	RS	2011	DEN	0	Assure Quality
Perform error trapping (systematic errors)	RS	2011	DEN	0	Assure Quality
Conduct accuracy assessment	RS	2011	MIL	6	Analyze Data
Resolve data issues	RS	2011	MIL	0	Acquire Data
Validate analysis results	RS	2011	MIL	0	Analyze Data
Verify results of analysis using ground truth	RS	2011	MIL	0	Analyze Data
Assess positional accuracy (RMS)	RS	2009	SAC	5	Prepare Data
Compare image geometry with ground control to assure spatial accuracy.	RS	2009	SAC	0	Assess Accuracy
Design validation sampling plan / methods	RS	2009	SAC	0	Validate & Ground – Truth Data
19 tasks			9 panels	71 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>A17 Create &amp; maintain data update schedule</b>			20% of panels		<b>A MANAGE DATA</b>
Create data update schedule	GIS	2013	USG	9	Manage Data
Update data according to schedule	GIS	2013	USG	0	Manage Data
Store data according to policies & procedures (versioning, SDE)	GIS	2013	USG	0	Manage Data
Develop data maintenance schedules	GIS	2005	SDM	11	Maintain GIS Data* (1)
4 tasks			2 panels	20 members	
<b>A18 Create &amp; maintain data dictionary</b>			20% of panels		<b>A MANAGE DATA</b>
Create data dictionary	GIS	2014	SLC	6	Acquire Data
Maintain Data Dictionaries	GIS	2007	GRC	5	Create Technical Documentation
2 tasks			2 panels	11 members	
<b>B1 Collect field attribute data</b>			70% of panels		<b>B GENERATE DATA</b>
Collect GPS observations	GIS	2014	SLC	6	Acquire Data
Record field data (GPS)	GIS	2013	USG	9	Capture Data
Collect Field Data (GPS, photo, coordinates, attributes)	GIS	2009	ARC	8	Develop Data
Collect data using GPS	GIS	2009	GSC	12	Gather Data
Electronically collect spatial data in the field (GPS, Traffic counters, total station, yield)	GIS	2008	LLC	12	Collect / Create Data
Perform Data Entry (e.g. college GPSdata, collect field data)	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Collect field attribute data (E,C)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Collect field location data via GPS (E,C)	GIS	2005	SDM	0	Create / Acquire GIS Data * (3)
8 tasks			7 panels	63 members	
<b>B2 Conduct surveys &amp; questionnaires</b>			40% of panels		<b>B GENERATE DATA</b>
Record field notes (photo, site surveys, inspections, samples)	GIS	2014	SLC	6	Acquire Data
Collect survey responses (questionnaire)	GIS	2013	USG	9	Capture Data
Collect data using field sheets	GIS	2009	GSC	12	Gather Data
Manually collect attribute data in the field (82%)	GIS	2008	LLC	12	Collect / Create Data
Administer questionnaires (27%)	GIS	2008	LLC	0	Collect / Create Data
5 tasks			4 panels	39 members	
<b>B3 Capture crowd-source data</b>			10% of panels		<b>B GENERATE DATA</b>
Capture crowd source data	GIS	2013	USG	9	Capture Data
1 tasks			1 panels	9 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>B4 Plan field missions</b>			50% of panels		<b>B GENERATE DATA</b>
Assemble fieldwork equipment	GIS	2014	SLC	6	Acquire Data
Calibrate control network	GIS	2014	SLC	0	Acquire Data
Coordinate acquisition logistics (permissions, legal, GPS mission planning)	GIS	2014	SLC	0	Acquire Data
Calibrate hardware (GPS, meters)	GIS	2013	USG	9	Manage Tools & Equipment
Create/ establish a data capture plan	GIS	2013	USG	0	Coordinate Projects
Establish (photogrametric) horizontal and vertical control (AGPS, INS, GCPs, tie poi	RS	2011	DEN	8	Acquire Data
Adjust GNSS ground control network	RS	2011	MIL	6	Process Data
Verify sensor calibration	RS	2011	MIL	0	Analyze Data
Configure field equipment (GPS, magnetometer, sensor installation)	RS	2011	MIL	0	Manage Systems
Calibrate Sensors	RS	2011	MIL	0	Manage Systems
Create airborne trajectory	RS	2011	MIL	0	Process Data
Create coverage index *	RS	2011	MIL	0	Acquire Data
Establish control networks	RS	2011	MIL	0	Acquire Data
Create sampling strategy	RS	2011	MIL	0	Project Planning
Obtain clearances (flight, ground permissions, customs)	RS	2011	MIL	0	Acquire Data
Develop field logistics (people, equipment, permissions)	RS	2009	SAC	5	Validate & Ground – Truth Data
16 tasks			5 panels	34 members	
<b>B5 Collect ground control points</b>			30% of panels		<b>B GENERATE DATA</b>
Collect ground reference data *	RS	2011	DEN	8	E Acquire Data
Conduct field campaigns *	RS	2011	MIL	6	Acquire Data
Conduct Flight surveys	RS	2011	MIL	0	Acquire Data
Conduct ground truthing *	RS	2011	MIL	0	Acquire Data
Collect ground control points for imagery registration	RS	2009	SAC	5	Validate & Ground – Truth Data
Conduct rapid in-situ reconnaissance	RS	2009	SAC	0	Validate & Ground – Truth Data
Collect spectral signatures for imagery classification.	RS	2009	SAC	0	Validate & Ground – Truth Data
Collect training & accuracy data (field or sensor based)	RS	2009	SAC	0	Validate & Ground – Truth Data
8 tasks			3 panels	19 members	
<b>B6 Digitize data</b>			80% of panels		<b>B GENERATE DATA</b>
Digitize data	GIS	2014	SLC	6	Process Data
"Heads-up" digitize data	GIS	2009	GSC	12	Process Data
Digitize Data (heads-up, tracing)	GIS	2009	ARC	8	Develop Data
Digitize feature geometry	GIS	2008	LLC	12	Collect / Create Data
Perform Data Entry (e.g. digitize geographic features, create Auto-Cad)	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Perform tablet digitization (E,C)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Perform "heads-up" (on-screen) digitization (E,C)	GIS	2005	SDM	0	Create / Acquire GIS Data * (3)
Digitize / vectorize data *	RS	2011	MIL	6	Process Data
Perform heads-up digitizing	RS	2009	SAC	5	Extract Information
9 tasks			8 panels	65 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>B7 Geocode addresses</b>			70% of panels		<b>B GENERATE DATA</b>
Geocode data	GIS	2014	SLC	6	Process Data
Geocode features	GIS	2013	USG	9	Analyze Data
Geocode addresses	GIS	2009	GSC	12	Process Data
Geocode Data	GIS	2009	ARC	8	Develop Data
Geocode (Adv)	GIS	2008	LLC	12	Collect / Create Data
Reverse geocode (82%) (Adv)	GIS	2008	LLC	0	Collect / Create Data
Perform Geo-coding	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Geocode data (E, C)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
8 tasks			7 panels	63 members	
<b>B8 Scan non-digital data</b>			60% of panels		<b>B GENERATE DATA</b>
Scan documents	GIS	2014	SLC	6	Acquire Data
Scan hard copy maps	GIS	2009	GSC	12	Gather Data
Scan Data	GIS	2009	ARC	8	Develop Data
Scan non-digital data (91%)	GIS	2008	LLC	12	Collect / Create Data
Scan hard copy images (E, C)	GIS	2005	SDM	11	Create Image Data
Scan data *	RS	2011	MIL	6	Acquire Data
6 tasks			6 panels	55 members	
<b>B9 Create/edit vector data</b>			80% of panels		<b>B GENERATE DATA</b>
Edit/update geometry	GIS	2014	SLC	6	Analyze Data
Create map layer	GIS	2014	SLC	0	Process Data
Edit data	GIS	2013	USG	9	Manage Data
Create shape files / feature classes	GIS	2013	USG	0	Capture Data
Update Geometry	GIS	2009	ARC	8	Maintain Data
Edit spatial data	GIS	2009	GSC	12	Process Data
Post / reconcile edits (e.g. changes)	GIS	2009	GSC	0	Manage Data
Create features	GIS	2008	LLC	12	Collect / Create Data
Edit feature geometry	GIS	2008	LLC	0	Modify Data
Update spatial data attributes	GIS	2008	LLC	0	Modify Data
Update Existing Data	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Refresh/ replace layers (e.g. imagery, thematic layers) (C )	GIS	2005	SDM	11	Maintain GIS Data* (1)
Perform vector editing /clean up (build topology) *	RS	2011	DEN	8	Generate Products
13 tasks			8 panels	71 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>B10 Create/edit attribute data</b>			50% of panels		<b>B GENERATE DATA</b>
Edit/update data attributes (data attribute tables)	GIS	2014	SLC	6	Analyze Data
Populate data attributes	GIS	2014	SLC	0	Process Data
Create Attribute Data	GIS	2009	ARC	8	Develop Data
Update Attributes	GIS	2009	ARC	0	Maintain Data
Standardize Attributes	GIS	2009	ARC	0	Develop Data
Edit attribute data	GIS	2009	GSC	12	Process Data
Enter data base information	GIS	2008	LLC	12	Collect / Create Data
Update non-spatial data attributes	GIS	2008	LLC	0	Modify Data
Edit GIS data(e.g. add, delete, update) (E,C)	GIS	2005	SDM	11	Maintain GIS Data* (1)
Populate GIS feature attributes (E,C)	GIS	2005	SDM	0	Create / Acquire GIS Data * (3)
10 tasks			5 panels	49 members	
<b>B11 Create/edit metadata</b>			100% of panels		<b>B GENERATE DATA</b>
Create metadata	GIS	2014	SLC	6	Process Data
Update metadata	GIS	2013	USG	9	Manage Data
Update Metadata	GIS	2009	ARC	8	Maintain Data
Create Metadata	GIS	2009	ARC	0	Develop Data
Create / update metadata	GIS	2009	GSC	12	Manage Data
Create metadata	GIS	2008	LLC	12	Collect / Create Data
Update Metadata	GIS	2008	LLC	0	Maintain Data
Create and Update Meta Data	GIS	2007	GRC	5	Create Technical Documentation
Create metadata (E,C)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
Update metadata (E,C)	GIS	2005	SDM	0	Maintain GIS Data* (1)
Populate metadata *	RS	2011	DEN	8	Generate Products
Create metadata structure	RS	2011	MIL	6	Manage Data
Compile metadata	RS	2009	SAC	5	Develop End Products
13 tasks			10 panels	82 members	
<b>B12 Create photogrammetric data</b>			10% of panels		<b>B GENERATE DATA</b>
Perform stereo compilation*	RS	2011	DEN	8	Generate Products
Derive topographic products	RS	2011	DEN	0	Generate Products
Edit DEMs	RS	2011	DEN	0	Produce Data
3 tasks			1 panels	8 members	
<b>B13 Create LIDAR based products</b>			30% of panels		<b>B GENERATE DATA</b>
Classify LIDAR	GIS	2013	USG	9	Analyze Data
Perform point cloud classification (automated macro filtering) *	RS	2011	DEN	8	Produce Data
Create intensity image (LiDAR)	RS	2011	DEN	0	Produce Data
Remove noise from raster / LIDAR data (spikes, bands, speckles) *	RS	2011	MIL	6	Process Data
4 tasks			3 panels	23 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

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Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>B14 COGO legal descriptions</b>			40% of panels		<b>B GENERATE DATA</b>
COGO data	GIS	2014	SLC	6	Process Data
Digitize data using COGO (e.g. metes & bounds)	GIS	2009	GSC	12	Process Data
COGO (55%)	GIS	2008	LLC	12	Collect / Create Data
COGO legal descriptions (E)	GIS	2005	SDM	11	Create / Acquire GIS Data * (3)
4 tasks			4 panels	41 members	
<b>C1 Georeference &amp; rectify data</b>			80% of panels		<b>C PROCESS DATA</b>
Georeference information (PDF, video, images)	GIS	2014	SLC	6	Process Data
Project data	GIS	2013	USG	9	Manage Data
Georeference data	GIS	2009	GSC	12	Process Data
Rectify / Georeference Data	GIS	2009	ARC	8	Develop Data
Rectify raster data (e.g. rubbersheeting)	GIS	2008	LLC	12	Modify Data
Georeference digital imagery (C )	GIS	2005	SDM	11	Create Image Data
Rectify images (C )	GIS	2005	SDM	0	Create Image Data
Georeference data (GNSS, INS) *	RS	2011	DEN	8	Produce Data
Georeference image / data	RS	2009	SAC	5	Prepare Data
9 tasks			8 panels	71 members	
<b>C2 Define spatial reference</b>			20% of panels		<b>C PROCESS DATA</b>
Define data's spatial reference	GIS	2009	GSC	12	Process Data
Define Projection	GIS	2009	ARC	8	Develop Data
2 tasks			2 panels	20 members	
<b>C3 Reproject &amp; transform data</b>			60% of panels		<b>C PROCESS DATA</b>
Convert datums and projections	GIS	2014	SLC	6	Process Data
Re-project data	GIS	2013	USG	9	Analyze Data
Change data's spatial reference	GIS	2009	GSC	12	Process Data
Transform spatial data (e.g. reprojections)	GIS	2008	LLC	12	Modify Data
Reproject & transform data *	RS	2011	MIL	6	Process Data
Perform projection/datum transformation	RS	2009	SAC	5	Prepare Data
Transform images (PCA, vegetation indices, band ratios)	RS	2009	SAC	0	Extract Information
7 tasks			6 panels	50 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>C4 Conduct image classification</b>			40% of panels		<b>C PROCESS DATA</b>
Classify imagery	GIS	2013	USG	9	Analyze Data
Perform image analysis (e.g. classification) (C )	GIS	2005	SDM	11	Create Image Data
Create raster training sets	RS	2011	MIL	6	Analyze Data
Classify data	RS	2011	MIL	0	Analyze Data
Determine classification scheme	RS	2009	SAC	5	Extract Information
Define spectral signatures for classification	RS	2009	SAC	0	Extract Information
Convert unsupervised classes for spectral signatures for hybrid classification	RS	2009	SAC	0	Extract Information
Conduct decision tree classification	RS	2009	SAC	0	Extract Information
Conduct sub-pixel classification (spectral mixture analysis)	RS	2009	SAC	0	Extract Information
Perform neural network classification	RS	2009	SAC	0	Extract Information
Perform supervised classification (single or multi-date image)	RS	2009	SAC	0	Extract Information
Perform unsupervised classification (single or multi-date image)	RS	2009	SAC	0	Extract Information
Create confusion matrix (contingency table)	RS	2009	SAC	0	Assess Accuracy
Refine classification (change inputs, iterate)	RS	2009	SAC	0	Extract Information
Reduce noise in classification	RS	2009	SAC	0	Develop End Products
Recode / reclassify image	RS	2009	SAC	0	Develop End Products
16 tasks			4 panels	31 members	
<b>C5 Evaluate accuracy of image classification</b>			20% of panels		<b>C PROCESS DATA</b>
Assess classification accuracy	RS	2011	DEN	8	Assure Quality
Assess attribution accuracy *	RS	2011	DEN	0	Assure Quality
Evaluate & modify spectral signatures based on separability for classification	RS	2009	SAC	5	Extract Information
Evaluate classification accuracy (user, producers, overall / kappa)	RS	2009	SAC	0	Assess Accuracy
Compare classification accuracy with standards	RS	2009	SAC	0	Assess Accuracy
Compare validation data with classification	RS	2009	SAC	0	Assess Accuracy
6 tasks			2 panels	13 members	
<b>C6 Mosaic/coregister images</b>			40% of panels		<b>C PROCESS DATA</b>
Create raster mosaic	GIS	2014	SLC	6	Process Data
Create mosaics *	RS	2011	MIL	6	Process Data
Conduct seam line generation and editing for mosaicking *	RS	2011	DEN	8	Produce Data
Co-register data (vertical registration) *	RS	2011	DEN	0	Produce Data
Mosaic image / data	RS	2009	SAC	5	Prepare Data
5 tasks			4 panels	25 members	

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June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>C7 Sample/resample image data</b>			30% of panels		<b>C PROCESS DATA</b>
Resample Data	GIS	2009	ARC	8	Develop Data
Resample image data *	RS	2011	MIL	6	Process Data
Conduct data sampling	RS	2011	MIL	0	Analyze Data
Resample image / data	RS	2009	SAC	5	Prepare Data
4 tasks			3 panels	19 members	
<b>C8 Conduct atmospheric / radiometric calibration</b>			20% of panels		<b>C PROCESS DATA</b>
Calibrate date (radiometric & geometric, atmospheric correction)	RS	2011	DEN	8	Produce Data
Perform atmospheric correction	RS	2009	SAC	5	Prepare Data
Perform radiometric correction	RS	2009	SAC	0	Prepare Data
Correct image defects	RS	2009	SAC	0	Prepare Data
4 tasks			2 panels	13 members	
<b>C9 Conduct image enhancement</b>			30% of panels		<b>C PROCESS DATA</b>
Perform image enhancement (pan sharpening, tonal balance, atmospheric correction, etc.)	RS	2011	MIL	6	Process Data
Enhance image for visual interpretation	RS	2011	DEN	8	Produce Data
Identify appropriate band combinations for display	RS	2009	SAC	5	Prepare Data
Enhance image contrast	RS	2009	SAC	0	Prepare Data
Filter image (edge enhancement, smoothing)	RS	2009	SAC	0	Extract Information
5 tasks			3 panels	19 members	
<b>C10 Conduct visual interpretation of imagery</b>			30% of panels		<b>C PROCESS DATA</b>
Interpret Imagery	GIS	2007	GRC	5	Conduct Data Analysis
Conduct visual interpretation	RS	2011	DEN	8	Generate Products
Conduct visual interpretation	RS	2009	SAC	5	Extract Information
3 tasks			3 panels	18 members	
<b>C11 Conduct geoprocessing</b>			60% of panels		<b>C PROCESS DATA</b>
Build geoprocessing models	GIS	2013	USG	9	Analyze Data
Write geoprocessing scripts (python)	GIS	2013	USG	0	Analyze Data
Create Geoprocessing Plan	GIS	2009	ARC	8	Develop products
Perform spatial join	GIS	2009	GSC	12	Manage Data
Create Data Processing Procedures (automate)	GIS	2009	ARC	8	Maintain Data
Preprocess Data	GIS	2009	ARC	0	Maintain Data
Geoprocess data (e.g. clip, buffer, union)	GIS	2008	LLC	12	Modify Data
Conduct Geoprocessing (e.g. clip, buffering, overlay, run models) (C )	GIS	2005	SDM	11	Conduct Spatial / Non-Spatial Analysis (4) (Vector)
Generalize vector data (smooth) *	RS	2011	MIL	6	Process Data
9 tasks			6 panels	66 members	

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June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>C12 Orthorectify photogrammetric data</b>			30% of panels		<b>C PROCESS DATA</b>
Perform ortho-rectification *	RS	2011	DEN	8	Produce Data
Orthorectify /rectify data (raster, vector, geocorrect)	RS	2011	MIL	6	Process Data
Ortho-rectify image / data	RS	2009	SAC	5	Prepare Data
3 tasks			3 panels	19 members	
<b>C13 Process / post-process GPS data</b>			40% of panels		<b>C PROCESS DATA</b>
Post process data (LIDAR field notes, GPS, Imagery)	GIS	2014	SLC	6	Process Data
Process GPS data	GIS	2013	USG	9	Manage Data
Post process GPS data (e.g. differential correction)	GIS	2009	GSC	12	Process Data
Post-process electronically collected field data (73%) (Adv.)	GIS	2008	LLC	12	Modify Data
4 tasks			4 panels	39 members	
<b>C14 Normalize data structure</b>			20% of panels		<b>C PROCESS DATA</b>
Normalize data structure (e.g. schema)	GIS	2009	GSC	12	Process Data
Normalize Data	GIS	2009	ARC	8	Develop Data
2 tasks			2 panels	20 members	
<b>D1 Conduct queries</b>			40% of panels		<b>D ANALYZE DATA</b>
Create query statements (SQL, joins, relates)	GIS	2014	SLC	6	Analyze Data
Create query statements (SQL, joins, relates)	GIS	2014	SLC	0	Analyze Data
Create data subsets (joins, relates, queries)	GIS	2013	USG	9	Analyze Data
Create Database Queries	GIS	2007	GRC	5	Manage Geographic Data Sets
Respond to Geographic Queries	GIS	2007	GRC	0	Conduct Data Analysis
Run Database Queries and Calculations	GIS	2007	GRC	0	Conduct Data Analysis
Create and run definition queries	RS	2011	DEN	8	Generate Products
7 tasks			4 panels	28 members	
<b>D2 Conduct network analysis</b>			50% of panels		<b>D ANALYZE DATA</b>
Build network data set	GIS	2014	SLC	6	Analyze Data
Conduct network analysis	GIS	2014	SLC	0	Analyze Data
Build geometric networks	GIS	2013	USG	9	Analyze Data
Identify least-cost path	GIS	2009	GSC	12	Analyze Data
Identify shortest route	GIS	2009	GSC	0	Analyze Data
Linear reference data	GIS	2009	GSC	0	Process Data
Model linear networks	GIS	2009	GSC	0	Analyze Data
Create Networks (routes)	GIS	2009	ARC	8	Develop Data
Perform dynamic segmentation (18%) (Adv.)	GIS	2008	LLC	12	Collect / Create Data
9 tasks			5 panels	47 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>D3 Conduct statistical analysis</b>			70% of panels		<b>D ANALYZE DATA</b>
Conduct statistical analysis	GIS	2014	SLC	6	Analyze Data
Generate non-spatial statistics	GIS	2013	USG	9	Analyze Data
Generate spatial statistics (vector, raster, interpolate)	GIS	2013	USG	0	Analyze Data
Generate statistical reports	GIS	2009	GSC	12	Analyze Data
Generate statistics (e.g. descriptive, spatial) (C)	GIS	2005	SDM	11	Conduct Spatial / Non-Spatial Analysis (4) (Vector)
Conduct trend analysis	RS	2011	MIL	6	Analyze Data
Perform geostatistical analysis	RS	2011	DEN	8	Generate Products
Perform regression analysis	RS	2009	SAC	5	Assess Accuracy
8 tasks			7 panels	57 members	
<b>D4 Conduct Proximity analysis</b>			20% of panels		<b>D ANALYZE DATA</b>
Perform proximity analysis	GIS	2009	GSC	12	Analyze Data
Perform proximity analysis	RS	2011	MIL	6	Analyze Data
2 tasks			2 panels	18 members	
<b>D5 Conduct spatial analysis</b>			40% of panels		<b>D ANALYZE DATA</b>
Conduct raster analysis	GIS	2014	SLC	6	Analyze Data
Conduct spatial analysis	GIS	2014	SLC	0	Analyze Data
Conduct surface analysis (slope, contour, TINs)	GIS	2014	SLC	0	Analyze Data
Conduct slope analysis	GIS	2009	GSC	12	Analyze Data
Derive new data (e.g. generate contours from DEM, data generalization)	GIS	2009	GSC	0	Process Data
Interpret Results (C)	GIS	2005	SDM	11	Conduct Spatial / Non-Spatial Analysis (4) (Vector)
QA/QC Data (C) (Spatial/Non-Spatial Analysis)	GIS	2005	SDM	0	Conduct Spatial / Non-Spatial Analysis (4) (Vector)
Conduct cultural resource analysis	RS	2011	MIL	6	Analyze Data
Conduct wetlands analysis	RS	2011	MIL	0	Analyze Data
Conduct emergency response analysis	RS	2011	MIL	0	Analyze Data
10 tasks			4 panels	35 members	
<b>D6 Conduct quantitative analysis</b>			40% of panels		<b>D ANALYZE DATA</b>
Conduct cost analysis	GIS	2014	SLC	6	Analyze Data
Conduct quantitative analysis on active sensor data	RS	2011	DEN	8	Generate Products
Conduct quantitative analysis on passive sensor data	RS	2011	DEN	0	Generate Products
Quantify features	RS	2011	MIL	6	Analyze Data
Tabulate area attributes *	RS	2011	MIL	0	Integrate Data
Summarize values in a grid (aggregate) *	RS	2011	MIL	0	Integrate Data
Quantify results (class statistics, landscape metrics)	RS	2009	SAC	5	Develop End Products
7 tasks			4 panels	25 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>D7 Conduct change detection</b>			30% of panels		<b>D ANALYZE DATA</b>
Perform change detection	RS	2011	DEN	8	Generate Products
Conduct change detection *	RS	2011	MIL	6	Analyze Data
Create a difference image (math tools)	RS	2011	MIL	0	Process Data
Perform time series analysis	RS	2009	SAC	5	Extract Information
4 tasks			3 panels	19 members	
<b>D8 Conduct view-shed analysis</b>			20% of panels		<b>D ANALYZE DATA</b>
Perform view shed analysis	GIS	2009	GSC	12	Analyze Data
Conduct line of sight analysis *	RS	2011	MIL	6	Analyze Data
2 tasks			2 panels	18 members	
<b>D9 Perform feature extraction / image segmentation</b>			40% of panels		<b>D ANALYZE DATA</b>
Extract Data	GIS	2009	ARC	8	Develop products
Perform vector (feature) extraction *	RS	2011	DEN	8	Generate Products
Extract features *	RS	2011	MIL	6	Analyze Data
Create ratio images (NDWI, NDVI, MSI, LAI, EVI, snow, tassal cap transformations)	RS	2011	MIL	0	Analyze Data
Perform object-based image analysis	RS	2009	SAC	5	Extract Information
Perform image segmentation	RS	2009	SAC	0	Extract Information
Conduct image subtraction (single bands or image transforms)	RS	2009	SAC	0	Extract Information
7 tasks			4 panels	27 members	
<b>D10 Conduct scenario analysis</b>			20% of panels		<b>D ANALYZE DATA</b>
Conduct fracture trace & lithology analysis	RS	2011	MIL	6	Analyze Data
Perform mensuration *	RS	2011	DEN	8	Generate Products
2 tasks			2 panels	14 members	
<b>D11 Create &amp; execute models</b>			60% of panels		<b>D ANALYZE DATA</b>
Build models (model builder, add-ins automate)	GIS	2014	SLC	6	Analyze Data
Execute models	GIS	2014	SLC	0	Analyze Data
Create 3D models	GIS	2013	USG	9	Analyze Data
Create Surface Models (Point to Raster, TIN, Tessellation)	GIS	2009	ARC	8	Develop Data
Create Models	GIS	2009	ARC	0	Develop products
Run Third Party Models (Hazus, Hydro, Lucis)	GIS	2009	ARC	0	Develop solutions
Create Models (e.g. process & scientific models, flow charts) (C)	GIS	2005	SDM	11	Conduct Spatial / Non-Spatial Analysis (4) (Vector)
Model land surface characteristics	RS	2011	MIL	6	Analyze Data
Develop a predictive planning model (urban sustainability model)	RS	2011	MIL	0	Analyze Data
Perform 3D modeling	RS	2011	DEN	8	Generate Products
Create surface models (TINs, DSMs, DTMs)	RS	2011	DEN	0	Generate Products
11 tasks			6 panels	48 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>E1 Install &amp; upgrade software</b>			50% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Install/Upgrade Software (licensing)	GIS	2009	ARC	8	Administer GIS Program
Maintain Software	GIS	2007	GRC	5	Manage Equipment and Supplies
Install Software (e.g. enhancements, service packs) (C )	GIS	2005	SDM	11	Provide Technical Support*
Maintain software (licensing, install, update)	RS	2011	DEN	8	Manage hardware and software
Install/update software (configure license server, field equipment)	RS	2011	MIL	6	Manage Systems
5 tasks			5 panels	38 members	
<b>E2 Create scripts &amp; custom tools</b>			80% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Execute programming scripts	GIS	2014	SLC	6	Analyze Data
Write programming scripts (python automate, C#)	GIS	2014	SLC	0	Analyze Data
Create custom tools	GIS	2013	USG	9	Produce Deliverables
Automate repetitive tasks (Adv.)	GIS	2008	LLC	12	Maintain Professional Development
Automate Manual Processes	GIS	2007	GRC	5	Conduct Data Analysis
Automate Manual Processes (e.g. scripting, modal building)	GIS	2007	GRC	0	Create/Maintain/Manage Geographic Data Sets
Create scripts (C )	GIS	2005	SDM	11	Conduct Spatial / Non-Spatial Analysis (4) (Vector)
Customize commercial software (C )	GIS	2005	SDM	0	Develop Software Applications
Automate production (scripting, models, programming)	RS	2011	DEN	8	Generate Products
Implement scripts (write, customize)	RS	2011	MIL	6	Process Data
Develop batch processing scripts	RS	2009	SAC	5	Extract Information
11 tasks			8 panels	62 members	
<b>E3 Evaluate software &amp; hardware</b>			40% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Evaluate software / tools	GIS	2013	USG	9	Manage Tools & Equipment
Design System Architecture	GIS	2009	ARC	8	Administer GIS Program
Assess System Infrastructure	GIS	2009	ARC	0	Manage Data / Information
Provide Technology Recommendations	GIS	2007	GRC	5	Perform Related Technical Duties
Define user software needs (C )	GIS	2005	SDM	11	Develop Software Applications
5 tasks			4 panels	33 members	
<b>E4 Configure &amp; upgrade servers</b>			20% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Configure servers	GIS	2014	SLC	6	Administer Server
Update server	GIS	2014	SLC	0	Administer Server
Trouble-shoot server	GIS	2014	SLC	0	Administer Server
Upgrade System Infrastructure	GIS	2009	ARC	8	Administer GIS Program
4 tasks			2 panels	14 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>E5 Optimize database performance</b>			30% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Create cache	GIS	2014	SLC	6	Process Data
Optimize database structure (Adv.)	GIS	2008	LLC	12	Maintain Data
Optimize data file folders (Adv.)	GIS	2008	LLC	0	Maintain Data
Optimize data files (Adv.)	GIS	2008	LLC	0	Maintain Data
Conduct database performance tuning (e.g. compress, build stats, index) (C)	GIS	2005	SDM	11	Maintain GIS Data* (1)
5 tasks			3 panels	29 members	
<b>E6 Order materials &amp; supplies</b>			30% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Order / update software, licenses & subscriptions	GIS	2013	USG	9	Manage Tools & Equipment
Procure Hardware	GIS	2009	ARC	8	Administer GIS Program
Procure Software	GIS	2009	ARC	0	Administer GIS Program
Order Supplies	GIS	2007	GRC	5	Manage Equipment and Supplies
4 tasks			3 panels	22 members	
<b>E7 Maintain equipment &amp; supplies</b>			50% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Inventory Hardware (GPS, meters)	GIS	2013	USG	9	Manage Tools & Equipment
Maintain GPS & field equipment (digital camera, laser range finder, DMI)	GIS	2009	GSC	12	Manage Equipment
Maintain plotter / printer	GIS	2009	GSC	0	Manage Equipment
Maintain scanner	GIS	2009	GSC	0	Manage Equipment
Maintain Vehicle	GIS	2009	GSC	0	Manage Equipment
Maintain Plotters and Printers	GIS	2007	GRC	5	Manage Equipment and Supplies
Maintain Hardware	GIS	2007	GRC	0	Manage Equipment and Supplies
Maintain equipment/ supplies) (E,C)	GIS	2005	SDM	11	Perform Administrative Responsibilities
Maintain field hardware (GNSS, sensors, planes)	RS	2011	DEN	8	Manage hardware and software
Maintain computer hardware	RS	2011	DEN	0	Manage hardware and software
10 tasks			5 panels	45 members	
<b>E8 Provide technical support</b>			60% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Provide technical support (troubleshoot)	GIS	2014	SLC	6	Support Users
Provide informal training / technical support	GIS	2013	USG	9	Manage People
Identify & report technical issues	GIS	2013	USG	0	Manage Tools & Equipment
Provide Technical Support	GIS	2009	ARC	8	Administer GIS Program
Provide technical support for users (Adv.)	GIS	2008	LLC	12	Disseminate Data
Provide Technical Support	GIS	2007	GRC	5	Perform Related Technical Duties
Resolve user technical problems (C)	GIS	2005	SDM	11	Provide Technical Support*
7 tasks			6 panels	51 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>E9 Create help files &amp; user guides</b>			20% of panels		<b>E MANAGE SOFTWARE &amp; HARDWARE</b>
Create Help Files (answer FAQs)	GIS	2014	SLC	6	Support Users
Build help files	GIS	2005	SDM	11	Develop Software Applications
Write Technical Guides (C )	GIS	2005	SDM	0	Provide Technical Support*
3 tasks			2 panels	17 members	
<b>F1 Coordinate project activities</b>			60% of panels		<b>F MANAGE PROJECTS</b>
Coordinate resources (budget, time, people)	GIS	2014	SLC	6	Plan Projects
Plan company events	GIS	2013	USG	9	Manage People
Implement Analytical Approach	GIS	2009	ARC	8	Develop solutions
Coordinate with Project Team	GIS	2007	GRC	5	Perform Project Management
Coordinate Projects with Stakeholders	GIS	2007	GRC	0	Perform Project Management
Coordinate work with Consultants	GIS	2007	GRC	0	Perform Project Management
Coordinate with Information Technology (IT)	GIS	2007	GRC	0	Perform Related Technical Duties
Schedule Equipment	GIS	2007	GRC	0	Manage Equipment and Supplies
Coordinate GIS projects (C )	GIS	2005	SDM	11	Perform Administrative Responsibilities
Maintain contracts (E)	GIS	2005	SDM	0	Perform Administrative Responsibilities
Coordinate project resources (staff, software, hardware)	RS	2011	MIL	6	Manage Projects
Coordinate with IT and R&D personnel (internal & external)	RS	2011	MIL	0	Manage Systems
12 tasks			6 panels	45 members	
<b>F2 Clarify stakeholders, scope, goals &amp; deliverables</b>			70% of panels		<b>F MANAGE PROJECTS</b>
Clarify audience/ scope of work	GIS	2014	SLC	6	Plan Projects
Establish project goals	GIS	2013	USG	9	Coordinate Projects
Define Project Goal	GIS	2009	ARC	8	Develop solutions
Develop project scope	GIS	2009	GSC	12	Manage Tasks
Determine Stakeholders	GIS	2009	ARC	8	Develop solutions
Clarify Business Needs	GIS	2009	ARC	0	Develop solutions
Gather User Requirements	GIS	2007	GRC	5	Fulfill Map/Data Requests, Perform Proj. Mgmt.
Develop Project Plan	GIS	2007	GRC	0	Perform Project Management
Prepare project scope & methodology	RS	2011	MIL	6	Project Planning
Identify project deliverables	RS	2011	MIL	0	Project Planning
Clarify project scope / objectives with client	RS	2009	SAC	5	Manage Projects
11 tasks			7 panels	59 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>F3 Evaluate project feasibility</b>			30% of panels		<b>F MANAGE PROJECTS</b>
Prepare project feasibility studies	GIS	2014	SLC	6	Plan Projects
Develop Project Prototype	GIS	2009	ARC	8	Develop solutions
Test Project Prototype	GIS	2009	ARC	0	Develop solutions
Define Limitations & Constraints (dependencies)	GIS	2009	ARC	0	Develop solutions
Evaluate data request feasibility	RS	2011	DEN	8	Develop Project Plan
5 tasks			3 panels	22 members	
<b>F4 Develop project timeline and schedule</b>			40% of panels		<b>F MANAGE PROJECTS</b>
Develop project schedule	GIS	2009	GSC	12	Manage Tasks
Develop Project Plan (schedules, budgets, work plans / flow, deliverables, timeline)	GIS	2009	ARC	8	Develop solutions
Estimate Task Schedule	GIS	2007	GRC	5	Perform Project Management
Prepare schedule / timeline	RS	2011	MIL	6	Project Planning
Track project milestones (funding, costs)	RS	2011	MIL	0	Manage Projects
5 tasks			4 panels	31 members	
<b>F5 Define project study area</b>			50% of panels		<b>F MANAGE PROJECTS</b>
Define Extent (footprint)	GIS	2009	ARC	8	Develop Data
Identify service area	GIS	2009	GSC	12	Analyze Data
Perform site selection	GIS	2009	GSC	0	Analyze Data
Determine area of interest	RS	2011	DEN	8	Develop Project Plan
Identify study area	RS	2011	MIL	6	Project Planning
Define area & time period of interest	RS	2009	SAC	5	Manage Projects
6 tasks			5 panels	39 members	
<b>F6 Allocate project resources</b>			30% of panels		<b>F MANAGE PROJECTS</b>
Delegate tasks	GIS	2013	USG	9	Manage People
Allocate resources (time/people /\$)	RS	2011	DEN	8	Manage Programs
Identify needed resources (software, servers, personnel, equipment...)	RS	2011	MIL	6	Project Planning
Assign tasks to personnel	RS	2011	MIL	0	Manage Projects
Allocate server space	RS	2011	MIL	0	Manage Systems
5 tasks			3 panels	23 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>F7 Evaluate project status</b>			50% of panels		<b>F MANAGE PROJECTS</b>
Evaluate project progress	GIS	2014	SLC	6	Plan Projects
Closeout project	GIS	2014	SLC	0	Support Users
Solicit user feedback	GIS	2014	SLC	0	Support Users
Create status updates (follow-up)	GIS	2013	USG	9	Coordinate Projects
Assess Analytical Outcomes	GIS	2009	ARC	8	Develop solutions
Communicate Analytical Outcomes	GIS	2009	ARC	0	Develop solutions
Evaluate Program (ROI)	GIS	2009	ARC	0	Administer GIS Program
Evaluate project	RS	2011	DEN	8	Develop Project Plan
Verify project completeness	RS	2011	DEN	0	Assure Quality
Monitor project status	RS	2011	DEN	0	Develop Project Plan
Monitor project environment (troubleshoot, versioning)	RS	2011	DEN	0	Produce Data
Evaluate environmental conditions	RS	2009	SAC	5	Manage Projects
Monitor schedule and budget	RS	2009	SAC	0	Manage Projects
13 tasks			5 panels	36 members	
<b>F8 Develop policy, standards &amp; procedures</b>			50% of panels		<b>F MANAGE PROJECTS</b>
Create policies & procedures for storing data	GIS	2013	USG	9	Coordinate Projects
Establish cartographic guidelines	GIS	2013	USG	0	Coordinate Projects
Develop Technical Standards	GIS	2009	ARC	8	Administer GIS Program
Participate in Policy Development Process	GIS	2009	ARC	0	Administer GIS Program
Develop (Cross-Org.) Standards	GIS	2009	ARC	0	Promote GIS
Apply Legal Requirements	GIS	2009	ARC	0	Manage Data / Information
Determine Analytical Approach	GIS	2009	ARC	0	Develop solutions
Develop Steering Committee	GIS	2009	ARC	0	Administer GIS Program
Develop GIS procedures (e.g. to update data)	GIS	2005	SDM	11	Maintain GIS Data* (1)
Prepare quality plan	RS	2011	MIL	6	Project Planning
Devise contingency plan (data, resources,gaps)	RS	2011	MIL	0	Project Planning
Define methodology & workflow (classification scheme)	RS	2009	SAC	5	Manage Projects
12 tasks			5 panels	39 members	
<b>F9 Document / record methodology &amp; procedures</b>			70% of panels		<b>F MANAGE PROJECTS</b>
Research analysis methodology	GIS	2013	USG	9	Coordinate Projects
Document operating procedures	GIS	2009	GSC	12	Manage Tasks
Document Data Processing Procedures	GIS	2009	ARC	8	Manage Data / Information
Complete Company documentation	GIS	2008	LLC	12	Perform Administrative Responsibilities
Document Project Results	GIS	2007	GRC	5	Create Technical Documentation
Document procedures	RS	2011	DEN	8	Manage Programs
Document project scope / objectives	RS	2009	SAC	5	Manage Projects
7 tasks			7 panels	59 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>F10 Prepare cost estimates and budgets</b>			50% of panels		<b>F MANAGE PROJECTS</b>
Create Fiscal Plan (budget)	GIS	2009	ARC	8	Administer GIS Program
Identify Project Costs	GIS	2009	ARC	0	Develop solutions
Prepare cost estimates (e.g. time, equipment) (C )	GIS	2005	SDM	11	Perform Administrative Responsibilities
Develop project budget (resources, \$, time, people)	RS	2011	DEN	8	Develop Project Plan
Prepare budget	RS	2011	MIL	6	Project Planning
Create project budget (staffing, cost factor, timeline, site visit)	RS	2009	SAC	5	Manage Projects
6 tasks			5 panels	38 members	
<b>F11 Evaluate and supervise project personnel</b>			30% of panels		<b>F MANAGE PROJECTS</b>
Evaluate employee performance	GIS	2013	USG	9	Manage People
Resolve employee related complaints	GIS	2013	USG	0	Manage People
Evaluate employees	RS	2011	DEN	8	Manage Programs
Evaluate staff performance (safety, interns)	RS	2011	MIL	6	Manage Projects
4 tasks			3 panels	23 members	
<b>F12 Prioritize and streamline project workflows</b>			40% of panels		<b>F MANAGE PROJECTS</b>
Establish Work Flow Priorities	GIS	2009	ARC	8	Administer GIS Program
Prioritize Work Load	GIS	2007	GRC	5	Perform Related Technical Duties
Streamline workflow (Increase efficiency)	RS	2011	DEN	8	Develop Project Plan
Troubleshoot problems	RS	2011	MIL	6	Manage Projects
Identify & implement process improvements	RS	2011	MIL	0	Manage Projects
5 tasks			4 panels	27 members	
<b>F13 Contribute to company's strategic plan</b>			20% of panels		<b>F MANAGE PROJECTS</b>
Develop Strategic Plan (mission statement)	GIS	2009	ARC	8	Administer GIS Program
Contribute to company's strategic plan	RS	2011	DEN	8	Manage Programs
2 tasks			2 panels	16 members	
<b>F14 Participate in hiring personnel</b>			50% of panels		<b>F MANAGE PROJECTS</b>
Interview interns	GIS	2013	USG	9	Professional Development
Participate in Hiring Process	GIS	2009	ARC	8	Administer GIS Program
Develop Job Descriptions	GIS	2009	ARC	0	Administer GIS Program
Participate in Hiring and Supervisory Activities	GIS	2007	GRC	5	Perform Related Technical Duties
Contribute to the hiring procedures	RS	2011	DEN	8	Manage Programs
Select project personnel	RS	2011	MIL	6	Manage Projects
6 tasks			5 panels	36 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>F15 Write proposals &amp; grant applications</b>			60% of panels		<b>F MANAGE PROJECTS</b>
Write proposals (grants)	GIS	2014	SLC	6	Produce Deliverables
Contribute to proposals	GIS	2013	USG	9	Professional Development
Write/Apply for Grants	GIS	2009	ARC	8	Administer GIS Program
Identify Funding Sources	GIS	2009	ARC	0	Administer GIS Program
Write proposals	RS	2011	DEN	8	Manage Programs
Write proposals & grant applic. to secure funding	RS	2011	MIL	6	Project Planning
Write funding proposals	RS	2009	SAC	5	Manage Projects
7 tasks			6 panels	42 members	
<b>F16 Create &amp; implement disaster recovery plan</b>			10% of panels		<b>F MANAGE PROJECTS</b>
Create a Disaster Recovery Plan	GIS	2009	ARC	8	Administer GIS Program
Implement Disaster / Recovery Plan	GIS	2009	ARC	0	Manage Data / Information
2 tasks			1 panels	8 members	
<b>G1 Design &amp; create maps</b>			90% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create base map	GIS	2014	SLC	6	Process Data
Create map books	GIS	2014	SLC	0	Produce Deliverables
Create navigational maps (GPS tours)	GIS	2014	SLC	0	Produce Deliverables
Create static maps (PDF, paper, e.g. density map)	GIS	2014	SLC	0	Produce Deliverables
Create maps using data driven pages	GIS	2013	USG	9	Produce Deliverables
Generate hard copy maps	GIS	2013	USG	0	Produce Deliverables
Create Cartographic Output	GIS	2009	ARC	8	Develop products
Create reference maps (e.g. streets)	GIS	2009	GSC	12	Generate Deliverables
Create thematic maps (e.g. zoning)	GIS	2009	GSC	0	Generate Deliverables
Create static maps	GIS	2008	LLC	12	Disseminate Data
Design map layouts	GIS	2008	LLC	0	Disseminate Data
Create map series templates	GIS	2008	LLC	0	Disseminate Data
Design Maps	GIS	2007	GRC	5	Fulfill Map/Data Requests
Design Cartographic Elements	GIS	2007	GRC	0	Fulfill Map/Data Requests
Create Maps	GIS	2007	GRC	0	Fulfill Map/Data Requests
Perform Graphic Design	GIS	2007	GRC	0	Fulfill Map/Data Requests
Plot Map	GIS	2007	GRC	0	Fulfill Map/Data Requests
Create map templates ( C )	GIS	2005	SDM	11	Develop Software Applications
Create maps (E,C)	GIS	2005	SDM	0	Generate GIS Products* (2) (hard copy, electronic)
Create Site Maps *	RS	2011	MIL	6	Acquire Data
Create cartographic maps *	RS	2011	MIL	0	Disseminate Results
Create site suitability maps	RS	2011	MIL	0	Analyze Data
Design maps	RS	2009	SAC	5	Develop End Products
Print large format maps	RS	2009	SAC	0	Develop End Products
www.geotechcenter.org	24 tasks	23	9 panels	74 members	06/14

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>G2 Design &amp; create web maps</b>			30% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create dynamic maps (e.g. web-map)	GIS	2014	SLC	6	Produce Deliverables
Generate soft copy maps	GIS	2013	USG	9	Produce Deliverables
Create interactive maps (82%) (Adv.)	GIS	2008	LLC	12	Disseminate Data
3 tasks			3 panels	27 members	
<b>G3 Create graphics</b>			30% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create graphic items (e.g. logos, headers, posters, exhibits) (E,C)	GIS	2005	SDM	11	Generate GIS Products* (2) (hard copy, electronic)
Create graphic items (e.g. logos, headers, posters, exhibits) (E,C)	GIS	2005	SDM	0	Generate GIS Products* (2) (hard copy, electronic)
Prepare exhibits (graphics, tables, charts, imagery, annotation)	RS	2011	MIL	6	Disseminate Results
Develop presentation graphics (graphs, power point) *	RS	2011	DEN	8	Generate Products
4 tasks			3 panels	25 members	
<b>G4 Create animations, fly-throughs and videos</b>			50% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create videos	GIS	2013	USG	9	Produce Deliverables
Create interactive graphics (FLASH, HTML5)	GIS	2013	USG	0	Produce Deliverables
Create animation (e.g. 3D, 4D)	GIS	2009	GSC	12	Generate Deliverables
Create video fly through	RS	2011	MIL	6	Analyze Data
Create 3D / stereo images *	RS	2011	MIL	0	Integrate Data
Create fly-throughs	RS	2011	DEN	8	Generate Products
Create animations	RS	2009	SAC	5	Develop End Products
7 tasks			5 panels	40 members	
<b>G5 Create reports</b>			90% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Compose reports (statistical, charts, graphs)	GIS	2014	SLC	6	Produce Deliverables
Create progress reports	GIS	2014	SLC	0	Produce Deliverables
Write reports (white papers, brochures)	GIS	2013	USG	9	Produce Deliverables
Create Reports	GIS	2009	ARC	8	Develop products
Create data analysis reports (e.g. tables, charts)	GIS	2009	GSC	12	Generate Deliverables
Create project status report	GIS	2009	GSC	0	Manage Tasks
Create reports (91%)	GIS	2008	LLC	12	Disseminate Data
Create Database Reports	GIS	2007	GRC	5	Manage Geographic Data Sets
Create analysis reports (E,C)	GIS	2005	SDM	11	Generate GIS Products* (2) (hard copy, electronic)
Write informational reports (e.g. progress, technical, procedural, recommendations)	GIS	2005	SDM	0	Perform Administrative Responsibilities
Prepare progress reports	RS	2011	MIL	6	Manage Projects
Prepare written reports/ documentation	RS	2011	MIL	0	Disseminate Results
Create scientific reports	RS	2009	SAC	5	Develop End Products
13 tasks			9 panels	74 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>G6 Create tables, charts &amp; graphs</b>			60% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create graphs, charts, tables & figures	GIS	2013	USG	9	Produce Deliverables
Create Spreadsheets	GIS	2009	ARC	8	Develop products
Create charts (82%)	GIS	2008	LLC	12	Disseminate Data
Create Database Tables	GIS	2007	GRC	5	Create/Maintain Geographic Data Sets
Create charts (E,C)	GIS	2005	SDM	11	Generate GIS Products* (2) (hard copy, electronic)
Create tables (E,C)	GIS	2005	SDM	0	Generate GIS Products* (2) (hard copy, electronic)
Create charts	RS	2009	SAC	5	Develop End Products
Create tables	RS	2009	SAC	0	Develop End Products
8 tasks			6 panels	50 members	
<b>G7 Create mailing lists and labels</b>			20% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create Mail Lists	GIS	2007	GRC	5	Fulfill Map/Data Requests
Generate mailing labels (E,C)	GIS	2005	SDM	11	Generate GIS Products* (2) (hard copy, electronic)
2 tasks			2 panels	16 members	
<b>G8 Develop presentations</b>			40% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create presentations	GIS	2014	SLC	6	Produce Deliverables
Create oral presentations	GIS	2013	USG	9	Produce Deliverables
Develop presentations	GIS	2009	GSC	12	Generate Deliverables
Prepare presentations	RS	2009	SAC	5	Develop End Products
4 tasks			4 panels	32 members	
<b>G9 Conduct oral presentations</b>			60% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Deliver presentations	GIS	2014	SLC	6	Produce Deliverables
Present project summary	GIS	2008	LLC	12	Disseminate Data
Create Presentation Materials	GIS	2007	GRC	5	Participate in Training and Outreach
Give Informational Presentations	GIS	2007	GRC	0	Participate in Training and Outreach
Create Presentation Materials	GIS	2007	GRC	0	Fulfill Map/Data Requests
Perform public speaking *	RS	2011	DEN	8	Develop Professionally
Give presentations at professional events (community colleges)	RS	2011	MIL	6	Professional Development
Present findings face to face	RS	2011	MIL	0	Disseminate Results
Present findings virtually	RS	2011	MIL	0	Disseminate Results
Conduct presentations	RS	2009	SAC	5	Pursue Professional Development & Outreach
10 tasks			6 panels	42 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>G10 Prepare documents &amp; data</b>			50% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create Data CD	GIS	2009	ARC	8	Develop products
Create Technical Documents	GIS	2009	ARC	0	Develop products
Prepare Document for Publication (graphic design software)	GIS	2009	ARC	0	Develop products
Load/Burn Data onto Media	GIS	2007	GRC	5	Fulfill Map/Data Requests
Deliver Maps and Data	GIS	2007	GRC	0	Fulfill Map/Data Requests
Distribute data according to organizational policy (E,C)	GIS	2005	SDM	11	Manage GIS Data
Distribute hard copy products (E,C)	GIS	2005	SDM	0	Generate GIS Products* (2) (hard copy, electronic)
Prepare deliverables (compile) *	RS	2011	DEN	8	Disseminate Products
Deliver Media (hard drive, DVD) *	RS	2011	DEN	0	Disseminate Products
Inform client of delivery	RS	2011	DEN	0	Disseminate Products
Publish final papers	RS	2011	MIL	6	Disseminate Results
Stage data access	RS	2011	MIL	0	Manage Data
12 tasks			5 panels	38 members	
<b>G11 Publish digital information</b>			90% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Publish web services	GIS	2014	SLC	6	Administer Server
Publish maps online	GIS	2013	USG	9	Produce Deliverables
Publish web services	GIS	2013	USG	0	Produce Deliverables
Publish Data to Web	GIS	2009	ARC	8	Develop solutions
Publish Data Library	GIS	2009	ARC	0	Manage Data / Information
Publish digital spatial information (CD, DVD)	GIS	2008	LLC	12	Disseminate Data
Publish spatial information on-line	GIS	2008	LLC	0	Disseminate Data
Publish metadata	GIS	2008	LLC	0	Disseminate Data
Manage Web Content	GIS	2007	GRC	5	Perform Related Technical Duties
Publish Map Products	GIS	2007	GRC	0	Fulfill Map/Data Requests
Distribute digital products (E,C)	GIS	2005	SDM	11	Generate GIS Products* (2) (hard copy, electronic)
Post deliverables to website or map service (wiki, cloud) *	RS	2011	DEN	8	Disseminate Products
Post deliverables to FTP and server *	RS	2011	DEN	0	Disseminate Products
Publish metadata *	RS	2011	MIL	6	Disseminate Results
Upload files *	RS	2011	MIL	0	Disseminate Results
Share data (web-FTP)	RS	2009	SAC	5	Develop End Products
16 tasks			9 panels	70 members	
<b>G12 Integrate data</b>			30% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Build mashups	RS	2011	DEN	8	Generate Products
Integrate non-spatial data *	RS	2011	DEN	0	Generate Products
Display maps and data on raster dataset *	RS	2011	MIL	6	Integrate Data
Link / hyperlink data *	RS	2011	MIL	0	Integrate Data
Combine image /data layers	RS	2009	SAC	5	Prepare Data
www.geotechcenter.org	5 tasks	26	3 panels	19 members	06/14

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>G13 Develop software applications &amp; web services</b>			30% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Create web services (WMS, WFS, ARC server)	GIS	2014	SLC	6	Produce Deliverables
Develop Web Applications	GIS	2009	ARC	8	Develop products
Produce Web Services	GIS	2009	ARC	0	Develop products
Create Custom Application	GIS	2009	ARC	0	Develop products
Determine application design format (e.g. platform, language)	GIS	2005	SDM	11	Develop Software Applications
Develop software applications	GIS	2005	SDM	0	Develop Software Applications
QA/QC software applications (e.g. beta test) (C )	GIS	2005	SDM	0	Develop Software Applications
Enhance existing custom applications	GIS	2005	SDM	0	Develop Software Applications
8 tasks			3 panels	25 members	
<b>G14 Develop and maintain websites</b>			30% of panels		<b>G GENERATE PRODUCTS &amp; SERVICES</b>
Develop GIS website	GIS	2014	SLC	6	Administer Server
Maintain GIS website	GIS	2014	SLC	0	Administer Server
Create websites	GIS	2013	USG	9	Produce Deliverables
Decommission services (website, links, hardware, files)	RS	2011	DEN	8	Manage hardware and software
4 tasks			3 panels	23 members	
<b>H1 Interact and communicate with co-workers</b>			30% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Communicate with co-workers	GIS	2008	LLC	12	Perform Administrative Responsibilities
Interact with co-workers	GIS	2008	LLC	0	Maintain Professional Development
Correspond with others (e.g. email, mail, phone) (C )	GIS	2005	SDM	11	Perform Administrative Responsibilities
Interact with co-workers *	RS	2011	DEN	8	Manage Programs
4 tasks			3 panels	31 members	
<b>H2 Conduct self-assessment &amp; plan career</b>			40% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Create a personal development plan	GIS	2013	USG	9	Professional Development
Identify / fill gaps in skill set	GIS	2013	USG	0	Professional Development
Map skills to tasks	GIS	2013	USG	0	Manage People
Take on challenging opportunities	GIS	2013	USG	0	Professional Development
Identify Gaps in Skills and Knowledge	GIS	2009	ARC	8	Pursue Professional Development
Set professional Goals	GIS	2009	ARC	0	Pursue Professional Development
Conduct self-assessment	GIS	2009	GSC	12	Professional Development
Inventory personnel skills	RS	2011	MIL	6	Manage Projects
8 tasks			4 panels	35 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>H3 Participate in conferences, seminars &amp; workshops</b>			100% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Attend conferences and seminars	GIS	2014	SLC	6	Professional Development
Present at conferences and seminars	GIS	2014	SLC	0	Professional Development
Attend conferences & training workshops	GIS	2013	USG	9	Professional Development
Participate in Professional Organizations	GIS	2009	ARC	8	Promote GIS
Participate in GIS Conferences	GIS	2009	ARC	0	Pursue Professional Development & Outreach
Attend Professional Conferences	GIS	2009	ARC	0	Pursue Professional Development & Outreach
Participate in workshops & conferences	GIS	2009	GSC	12	Professional Development
Attend User Conferences	GIS	2008	LLC	12	Maintain Professional Development
Participate in job related workshops	GIS	2008	LLC	0	Maintain Professional Development
Present at User Conferences (55%) (Adv.)	GIS	2008	LLC	0	Maintain Professional Development
Participate in job related professional organizations	GIS	2008	LLC	0	Maintain Professional Development
Participate in User Groups	GIS	2007	GRC	5	Participate in Training and Outreach
Participate in professional conferences (e.g. oral, poster submissions, publish/ submit	GIS	2005	SDM	11	Pursue Professional Development
Participate in GIS user groups (E,C)	GIS	2005	SDM	0	Pursue Professional Development
Participate in conferences, seminars and workshops *	RS	2011	DEN	8	Develop Professionally
Attend professional events *	RS	2011	MIL	6	Professional Development
Participate in workshops	RS	2009	SAC	5	Pursue Professional Development & Outreach
Participate in conferences	RS	2009	SAC	0	Pursue Professional Development & Outreach
18 tasks			10 panels	82 members	
<b>H4 Conduct training seminars and workshops</b>			90% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Conduct training (meetings, job shadow)	GIS	2014	SLC	6	Support Users
Teach classes	GIS	2013	USG	9	Professional Development
Conduct presentations, workshops, outreach seminars	GIS	2013	USG	0	Professional Development
Train GIS Employees	GIS	2009	ARC	8	Administer GIS Program
Teach GIS	GIS	2009	ARC	0	Promote GIS
Train End Users	GIS	2009	ARC	0	Train End Users
Provide training	GIS	2009	GSC	12	Generate Deliverables
Train Other Staff	GIS	2007	GRC	5	Participate in Training and Outreach
Cross-train within organization (C )	GIS	2005	SDM	11	Pursue Professional Development
Train GIS end-user(s) (C )	GIS	2005	SDM	0	Provide Technical Support*
Train client on product	RS	2011	DEN	8	Disseminate Products
Conduct training (job shadow) *	RS	2011	DEN	0	Develop Professionally
Conduct training (external/ internal)	RS	2011	MIL	6	Professional Development
Conduct workshops	RS	2009	SAC	5	Pursue Professional Development & Outreach
14 tasks			9 panels	70 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>H5 Develop training program &amp; materials</b>			50% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Develop instructional materials	GIS	2014	SLC	6	Support Users
Develop employee training plan	GIS	2013	USG	9	Manage People
Develop Training Program	GIS	2009	ARC	8	Promote GIS
Organize Staff/Department Training	GIS	2007	GRC	5	Participate in Training and Outreach
Produce training materials	RS	2009	SAC	5	Pursue Professional Development & Outreach
5 tasks			5 panels	33 members	
<b>H6 Attend professional training classes &amp; workshops</b>			80% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Attend employer mandated training	GIS	2014	SLC	6	Professional Development
Attend webinars and on-line classes	GIS	2014	SLC	0	Professional Development
Take GIS Classes (vendor training)	GIS	2009	ARC	8	Pursue Professional Development
Attend Technical Workshops	GIS	2009	ARC	0	Pursue Professional Development
Attend training	GIS	2009	GSC	12	Professional Development
Complete job related classes (online / classroom)	GIS	2008	LLC	12	Maintain Professional Development
Take advanced training courses (e.g. technical training & education courses) (C )	GIS	2005	SDM	11	Pursue Professional Development
Attend training (classroom, on-line, on-the-job, job shadow ) *	RS	2011	DEN	8	Develop Professionally
Attend training *	RS	2011	MIL	6	Professional Development
Develop personal skills & qualifications *	RS	2011	MIL	0	Professional Development
Attend on-line courses (podcast / webinars)	RS	2009	SAC	5	Pursue Professional Development & Outreach
11 tasks			8 panels	68 members	
<b>H7 Pursue advance degrees &amp; certificates</b>			50% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Obtain advanced degrees	GIS	2013	USG	9	Professional Development
Pursue higher education / advanced degrees	GIS	2013	USG	0	Professional Development
Pursue Advanced Degree	GIS	2009	ARC	8	Pursue Professional Development
Pursue advance degrees / certificates *	RS	2011	MIL	6	Professional Development
Pursue advanced degree *	RS	2011	DEN	8	Develop Professionally
Pursue advanced degrees	RS	2009	SAC	5	Pursue Professional Development & Outreach
6 tasks			5 panels	36 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>H8 Acquire &amp; maintain professional certification(s)</b>			80% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Obtain certifications and licensure	GIS	2014	SLC	6	Professional Development
Maintain credentials	GIS	2014	SLC	0	Professional Development
Pursue professional licensure (GISP, ESRI Certification, Oracle Certification)	GIS	2013	USG	9	Professional Development
Obtain professional certification (e.g. GISP, ASPRS)	GIS	2009	GSC	12	Professional Development
Pursue Professional Certification	GIS	2009	ARC	8	Pursue Professional Development
Acquire GIS Certification (45%)	GIS	2008	LLC	12	Maintain Professional Development
Acquire professional certification	RS	2011	MIL	6	Professional Development
Pursue professional certification *	RS	2011	DEN	8	Develop Professionally
Acquire professional certifications	RS	2009	SAC	5	Pursue Professional Development & Outreach
9 tasks			8 panels	66 members	
<b>H9 Promote and represent the field of geospatial technology</b>			40% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Promote GIS	GIS	2014	SLC	6	Professional Development
Participate in Regional GIS Cooperative	GIS	2009	ARC	8	Promote GIS
Host GIS Event (GIS Day)	GIS	2009	ARC	0	Promote GIS
Display Maps and Posters	GIS	2009	ARC	0	Promote GIS
Educate and Promote GIS Capabilities	GIS	2007	GRC	5	Participate in Training and Outreach
Participate in public relations activities (E,C)	GIS	2005	SDM	11	Perform Administrative Responsibilities
Represent GIS at meetings (e.g. committees, user groups, organizational conferences)	GIS	2005	SDM	0	Perform Administrative Responsibilities
7 tasks			4 panels	30 members	
<b>H10 Participate in community and professional outreach activities</b>			50% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Participate in volunteer activities	GIS	2013	USG	9	Professional Development
Contribute to open source community (widgets, SQL, scripting, web maps...)	GIS	2013	USG	0	Professional Development
Present at Events (High School, College, Conferences)	GIS	2009	ARC	8	Promote GIS
Conduct Community Outreach	GIS	2009	ARC	0	Promote GIS
Perform Community outreach	GIS	2008	LLC	12	Maintain Professional Development
Provide professional outreach *	RS	2011	DEN	8	Develop Professionally
Conduct community outreach	RS	2009	SAC	5	Pursue Professional Development & Outreach
Produce outreach materials (brochures etc.)	RS	2009	SAC	0	Pursue Professional Development & Outreach
8 tasks			5 panels	42 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>H11 Read job related information</b>			60% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Subscribe to trade publications	GIS	2014	SLC	6	Professional Development
Read periodicals	GIS	2013	USG	9	Professional Development
Read Books, Manuals and Professional Journals	GIS	2009	ARC	8	Pursue Professional Development
Study Related Fields (IT, Science, GPS, Database)	GIS	2009	ARC	0	Pursue Professional Development
Use Online Documentation	GIS	2009	ARC	0	Pursue Professional Development
Subscribe to List-serves	GIS	2009	ARC	0	Pursue Professional Development
View job related information (e.g. blogs, news feeds, print publications, forums)	GIS	2008	LLC	12	Maintain Professional Development
Read professional literature	RS	2011	MIL	6	Professional Development
Read technical articles	RS	2009	SAC	5	Pursue Professional Development & Outreach
Research fields of application	RS	2009	SAC	0	Pursue Professional Development & Outreach
10 tasks			6 panels	46 members	
<b>H12 Participate in mentoring programs</b>			80% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Participate in on-the-job training (job shadow)	GIS	2014	SLC	6	Professional Development
Participate in mentor / mentee programs	GIS	2013	USG	9	Professional Development
Conduct employee check-ins	GIS	2013	USG	0	Manage People
Provide Professional Development (mentor, nurture)	GIS	2009	ARC	8	Administer GIS Program
Develop Internships	GIS	2009	ARC	0	Promote GIS
Cross-training (e.g. mentoring, coaching)	GIS	2009	GSC	12	Professional Development
Supervise interns (82%) (Adv.)	GIS	2008	LLC	12	Perform Administrative Responsibilities
Supervise Interns (C )	GIS	2005	SDM	11	Perform Administrative Responsibilities
Participate in mentoring program *	RS	2011	DEN	8	Develop Professionally
Mentor others	RS	2009	SAC	5	Pursue Professional Development & Outreach
10 tasks			8 panels	71 members	
<b>H13 Publish professional articles</b>			40% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Publish papers	GIS	2013	USG	9	Professional Development
Write Papers	GIS	2009	ARC	8	Promote GIS
Contribute to publications *	RS	2011	DEN	8	Develop Professionally
Publish journal articles	RS	2009	SAC	5	Pursue Professional Development & Outreach
4 tasks			4 panels	30 members	

**DACUM JOB TASKS: GIS & REMOTE SENSING**

June, 2014

Task Category / Task	Sector	Year	DACUM Panels		Duty Category / Duty
			Panel	Panel Size	
<b>H14 Network professionally</b>			50% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Expand professional network	GIS	2014	SLC	6	Professional Development
Expand social / professional connections face to face (networking)	GIS	2013	USG	9	Professional Development
Pursue professional relationships online (forums, emails, LinkedIn)	GIS	2013	USG	0	Professional Development
Network with Peers	GIS	2009	ARC	8	Pursue Professional Development
Attend User Groups	GIS	2009	ARC	0	Pursue Professional Development
Network Internally about GIS	GIS	2009	ARC	0	Promote GIS
Network with other job related professionals	GIS	2008	LLC	12	Maintain Professional Development
Network with other Professionals *	RS	2011	DEN	8	Develop Professionally
8 tasks			5 panels	43 members	
<b>H15 Participate on committees</b>			30% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Participate in user groups and committees	GIS	2014	SLC	6	Professional Development
Volunteer for Committee Assignments	GIS	2009	ARC	8	Promote GIS
Participate in review panels (on-line & in-person)	RS	2009	SAC	5	Pursue Professional Development & Outreach
3 tasks			3 panels	19 members	
<b>H16 Research technology trends</b>			50% of panels		<b>H PROFESSIONAL DEVELOPMENT</b>
Explore new technologies	GIS	2014	SLC	6	Professional Development
Research Technology Trends	GIS	2009	ARC	8	Pursue Professional Development
Research current/emerging trends (e.g. publications, on-line)	GIS	2009	GSC	12	Professional Development
Research GIS Technology Trends	GIS	2007	GRC	5	Perform Related Technical Duties
Research technology *	RS	2011	DEN	8	Develop Project Plan
5 tasks			5 panels	39 members	
<b>TOTAL</b>			<b>10 panels</b>	<b>82 members</b>	
	<b>835 tasks</b>				

ARC, American River College, Sacramento, CA - Senior GIS Analyst - June 4-5, 2009, 8 panel members  
MIL, ASPRS National Conference, Milwaukee, WI - Remote Sensing Specialist - May 1-2, 2011, 6 members  
GSC, Gainesville State College, Atlanta, GA - GIS Technician - January 16-17, 2009, 12 panel members  
GRC, Green River Community College - GIS Technician - June 12, 2007, 5 panel members  
LLC, Lake Land College, Mattoon, IL - GIS Technician - November 19-20, 2008, 12 panel members

DEN, Metro State College, Denver, CO - Remote Sensing Specialist - September 14-15, 2011, 8 panel members  
SAC, Mission College, Santa Clara, CA - Remote Sensing Specialist - August 20 - 21, 2009, 5 panel members  
SDM, San Diego Mesa College, San Diego, CA - GIS Technician - January 13-14, 2005, 11 panel members  
USG, U.S. Geospatial Intelligence Foundation, Herndon, VA - Geospatial Analyst - October 22-23, 2013, 9 panel members  
SLC, Salt Lake Community College, Salt Lake City, UT - GIS Specialist - March 27-28, 2014, 6 panel members

By: John Johnson, National GeoTech Center, 2014

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Accuracy &amp; precision</b>			30% of panels	
Precision (accuracy)	GIS	2009	ARC	8
Accuracy & precision	GIS	2008	LLC	12
Precision	RS	2011	DEN	8
Accuracy	RS	2011	DEN	0
Total = 4			3 panels	28 members
<b>CAD, Engineering drawings</b>			40% of panels	
Engineering	GIS	2013	USG	9
Drafting	GIS	2008	LLC	12
Reading engineering-grade plans	GIS	2005	SDM	11
Computer Aided Design CAD	RS	2011	MIL	6
Total = 4			4 panels	38 members
<b>Computer</b>			60% of panels	
Computer	GIS	2014	SLC	6
Computer	GIS	2013	USG	9
Information Technology	GIS	2013	USG	0
Basic Computer Skills	GIS	2009	ARC	8
Computational Thinking	GIS	2009	ARC	0
Operating Systems, Computational Thinking	GIS	2009	ARC	0
Burn to disk	GIS	2009	GSC	12
Information Technology (IT)	RS	2011	MIL	6
Tech savvy	RS	2011	MIL	0
Information Technology (IT)	RS	2009	SAC	5
Navigating graphical user interface	RS	2009	SAC	0
Tech savvy	RS	2009	SAC	0
Total = 12			6 panels	46 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Computer networks, servers</b>			40% of panels	
Networks	GIS	2009	ARC	8
Server Administration	GIS	2009	ARC	0
Data custodianship	GIS	2008	LLC	12
Computer, Network configuration	GIS	2005	SDM	11
Security restrictions on data	GIS	2005	SDM	0
Data exchange procedures	GIS	2005	SDM	0
Working in secure environment	RS	2011	DEN	8
Total = 7			4 panels	39 members
<b>Coordinate systems, projections</b>			80% of panels	
Coordinate Systems	GIS	2014	SLC	6
Coordinate Systems	GIS	2009	ARC	8
Spatial projections	GIS	2009	GSC	12
Coordinate systems Projections	GIS	2008	LLC	12
map datum, geoid	GIS	2007	GRC	5
Coordinate systems	GIS	2007	GRC	0
projections	GIS	2007	GRC	0
Coordinate systems	RS	2011	DEN	8
Datums	RS	2011	DEN	0
Map projections	RS	2011	DEN	0
Projections & coordinate systems	RS	2011	MIL	6
Datum transformations, Map projections	RS	2009	SAC	5
Total = 12			8 panels	62 members
<b>Current events</b>			10% of panels	
Current events	GIS	2013	USG	9
Total = 1			1 panels	9 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Database technology</b>			50% of panels	
Database	GIS	2014	SLC	6
Spatial database	GIS	2013	USG	9
Database programs	GIS	2009	ARC	8
Database structure	GIS	2008	LLC	12
Database development	GIS	2007	GRC	5
Database administration	GIS	2007	GRC	0
Experience with relational databases	GIS	2007	GRC	0
Total = 7			5 panels	40 members
<b>File formats, transfers &amp; conversions</b>			40% of panels	
Adding data to a project (GIS, CAD)	GIS	2009	GSC	12
Export formats, properties; settings	GIS	2009	GSC	0
File types (SHP, GDB, Coverage, CAD, DGN, TXT, IMG, TIF, SID, F	GIS	2009	GSC	0
Data sources	GIS	2009	GSC	0
FTP site	GIS	2009	GSC	0
File transfer	GIS	2007	GRC	5
File formats	RS	2011	MIL	6
File management	RS	2009	SAC	5
Managing very large data sets	RS	2009	SAC	0
Total = 9			4 panels	28 members
<b>Geography</b>			40% of panels	
Geographic principals	GIS	2013	USG	9
Geographic Theory	GIS	2013	USG	0
Cultural geography	GIS	2013	USG	0
Physical geography	GIS	2013	USG	0
Geographic principles	GIS	2007	GRC	5
Geographic principles	RS	2011	DEN	8
Geography	RS	2011	MIL	6
Total = 7			4 panels	28 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Geoprocessing, modeling</b>			20% of panels	
Geoprocessing	GIS	2009	ARC	8
Create TIN model	GIS	2009	GSC	12
Creating models	GIS	2009	GSC	0
Geoprocessing methods	GIS	2009	GSC	0
Total = 4			2 panels	20 members
<b>Geometry</b>			20% of panels	
Geometry	GIS	2013	USG	9
Geometry	GIS	2005	SDM	11
Total = 2			2 panels	20 members
<b>GIS</b>			30% of panels	
GIS	GIS	2014	SLC	6
Topology	GIS	2014	SLC	0
Geocoding	GIS	2009	ARC	8
GIS	RS	2011	MIL	6
Total = 4			3 panels	20 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>GPS, GNSS, surveying, geotagging</b>			80% of panels	
Geotagging	GIS	2014	SLC	6
GPS, Total Station	GIS	2009	ARC	8
Surveying Techniques	GIS	2009	ARC	0
Post Processing	GIS	2009	ARC	0
Cadastral	GIS	2008	LLC	12
Variable Rate Technology (VRT)	GIS	2008	LLC	0
Global GPS system	GIS	2007	GRC	5
Basic survey principles	GIS	2007	GRC	0
Land surveying	GIS	2005	SDM	11
GNSS basics	RS	2011	DEN	8
Surveying basics	RS	2011	DEN	0
GNSS	RS	2011	MIL	6
Principles of land surveying	RS	2011	MIL	0
Geodesy	RS	2011	MIL	0
GPS technology	RS	2009	SAC	5
Geodesy	RS	2009	SAC	0
Total = 16			8 panels	61 members
<b>Industry sector applications</b>			30% of panels	
Environmental science	GIS	2013	USG	9
Industry sector	GIS	2013	USG	0
Related Industries	GIS	2009	GSC	12
Application specific knowledge (forestry, agriculture, natural resources)	RS	2009	SAC	5
History & natural history of study site	RS	2009	SAC	0
Total = 5			3 panels	26 members
<b>Jargon, acronyms</b>			20% of panels	
Vernacular	GIS	2014	SLC	6
Industry jargon	GIS	2009	GSC	12
Total = 2			2 panels	18 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Legal descriptions</b>			40% of panels	
Plats & deeds	GIS	2009	GSC	12
Land measurements	GIS	2008	LLC	12
Land descriptions	GIS	2008	LLC	0
Land divisions	GIS	2008	LLC	0
Legal descriptions	GIS	2008	LLC	0
Interpret legal descriptions	GIS	2007	GRC	5
Measurement space (spectral)	RS	2009	SAC	5
Total = 7			4 panels	34 members
<b>Legal requirements</b>			20% of panels	
Legal Requirements	GIS	2009	ARC	8
Copyright laws	GIS	2008	LLC	12
OSHA requirements	GIS	2008	LLC	0
Total = 3			2 panels	20 members
<b>Mathematics, algebra</b>			90% of panels	
Math	GIS	2014	SLC	6
Algebra	GIS	2013	USG	9
Math	GIS	2013	USG	0
Algebra	GIS	2009	ARC	8
Mathematics (geometry, statistics, trigonometry, algebra)	GIS	2009	GSC	12
Mathematics	GIS	2008	LLC	12
Mathematics	GIS	2005	SDM	11
Map algebra	RS	2011	DEN	8
Math	RS	2011	MIL	6
Math	RS	2009	SAC	5
Total = 10			9 Panels	77 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Photogrammetry &amp; Remote Sensing</b>			80% of panels	
Color bands	GIS	2014	SLC	6
Apply Weights	GIS	2009	ARC	8
Image processing	GIS	2009	ARC	0
Photogrammetry	GIS	2009	ARC	0
Photogrammetry	GIS	2008	LLC	12
Remote sensing	GIS	2008	LLC	0
Thermal imaging	GIS	2008	LLC	0
Basic remote sensing theory	GIS	2007	GRC	5
Photogrammetry	GIS	2005	SDM	11
Biophysical properties	RS	2011	DEN	8
Digital stereography	RS	2011	DEN	0
Electromagnetic spectrum	RS	2011	DEN	0
Sensor types & characteristics	RS	2011	DEN	0
GCPs – ground control points	RS	2011	DEN	0
Apply raster math tools	RS	2011	MIL	6
Basic photogrammetry	RS	2011	MIL	0
Image processing	RS	2011	MIL	0
LIDAR	RS	2011	MIL	0
Principles of image processing	RS	2011	MIL	0
Principles of remote sensing	RS	2011	MIL	0
Familiarization with remote sensing data resources	RS	2009	SAC	5
Histograms	RS	2009	SAC	0
Principles of sensor design for RS	RS	2009	SAC	0
Radiometric physics (principles for RS)	RS	2009	SAC	0
Spectral signatures (reflectance)	RS	2009	SAC	0
Total = 25			8 panels	61 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Physics, Chemistry</b>			30% of panels	
Physics	GIS	2013	USG	9
Chemistry	GIS	2013	USG	0
Physics, introductory	RS	2011	DEN	8
Physics	RS	2011	MIL	6
Total = 4			3 panels	23 members
<b>Programming, scripting</b>			90% of panels	
C#	GIS	2014	SLC	6
C++	GIS	2014	SLC	0
Programming skills	GIS	2014	SLC	0
Python	GIS	2014	SLC	0
Scripting	GIS	2014	SLC	0
Programming (Java, Python, HTML)	GIS	2013	USG	9
Automate Procedures	GIS	2009	ARC	8
Familiar Programming Languages	GIS	2009	ARC	0
Python SQL Visual Basic (VBA)	GIS	2009	ARC	0
Write Macros	GIS	2009	ARC	0
Basic scripting (SQL, VB, HTML, Python, ASP, CSS, Query)	GIS	2009	GSC	12
Programming	GIS	2008	LLC	12
Experience with computer programming concepts	GIS	2007	GRC	5
Programming languages (VBA)	GIS	2005	SDM	11
HTML	RS	2011	DEN	8
Programming	RS	2011	DEN	0
Programming	RS	2011	MIL	6
Scripting	RS	2011	MIL	0
Total = 18			9 panels	77 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Queries &amp; analysis</b>			50% of panels	
Query statements	GIS	2014	SLC	6
SQL	GIS	2014	SLC	0
Data Analysis	GIS	2009	ARC	8
Spatial Analysis	GIS	2009	ARC	0
Trend Analysis	GIS	2009	ARC	0
Interpolation	GIS	2009	GSC	12
Query (spatial/attribute)	GIS	2008	LLC	12
Contour mapping	GIS	2008	LLC	0
Terrain analysis	RS	2011	MIL	6
Total = 9			5 panels	44 members
<b>Raster / Vector</b>			20% of panels	
Raster / Vector	GIS	2009	GSC	12
Raster / vector	RS	2011	DEN	8
Total = 2			2 panels	20 members
<b>Scale, resolution</b>			50% of panels	
Scale	GIS	2009	ARC	8
Map scale	GIS	2009	GSC	12
Scale	GIS	2008	LLC	12
Scale	GIS	2007	GRC	5
Resolution (spatial, spectral, temporal, radiometric)	RS	2011	DEN	8
Total = 5			5 panels	45 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Software</b>			50% of panels	
Office Software	GIS	2009	ARC	8
Legacy technology	GIS	2009	GSC	12
Modify user interface	GIS	2009	GSC	0
End user Web applications	GIS	2005	SDM	11
Office software suite	RS	2011	MIL	6
Data/software licensing	RS	2009	SAC	5
Software	RS	2009	SAC	0
Software & hardware management	RS	2009	SAC	0
Total = 8			5 panels	42 members
<b>Standards (client, customer, industry)</b>			50% of panels	
Existing Standards,	GIS	2009	ARC	8
Client/company standards	GIS	2009	GSC	12
GIS Industry standards	GIS	2009	GSC	0
Naming conventions	GIS	2009	GSC	0
“ISO 9000” standards	GIS	2008	LLC	12
Quality control & assurance procedures	GIS	2008	LLC	0
technological standards	GIS	2007	GRC	5
ASPRS standards	RS	2011	DEN	8
NMAP Standards	RS	2011	DEN	0
NSSDA standards	RS	2011	DEN	0
ISO standards/protocol	RS	2011	DEN	0
Total = 11			5 panels	45 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

KNOWLEDGE AREA	Sector	Year	DACUM Panels	
			Panel	Size
<b>Statistics, probability</b>			80% of panels	
Statistics	GIS	2014	SLC	6
Spatial statistics	GIS	2013	USG	9
Statistics	GIS	2013	USG	0
Statistics	GIS	2009	ARC	8
Statistics	GIS	2007	GRC	5
Statistics	GIS	2005	SDM	11
Statistics	RS	2011	DEN	8
Spatial Statistic	RS	2011	DEN	0
Statistics	RS	2011	MIL	6
Zonal statistics	RS	2011	MIL	0
Statistics	RS	2009	SAC	5
Probability	RS	2009	SAC	0
Total = 12			8 panels	58 members
<b>Trigonometry, calculus</b>			20% of panels	
Trigonometry	GIS	2013	USG	9
Calculus	GIS	2013	USG	0
Trigonometry	RS	2011	DEN	8
Total = 3			2 panels	17 members
<b>Units of measurement, conversions</b>			20% of panels	
Unit conversions	GIS	2009	GSC	12
Units of measure	GIS	2009	GSC	0
Unit conversions	GIS	2008	LLC	12
Total = 3			2 panels	24 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Cartography</b>			100% of panels	
Cartography	GIS	2014	SLC	6
Cartographic design	GIS	2013	USG	9
Cartography*	GIS	2009	ARC	8
Color management	GIS	2009	ARC	0
Graphic Software Operation	GIS	2009	ARC	0
Printing Technology	GIS	2009	ARC	0
Cartographic license	GIS	2009	GSC	12
Create map book	GIS	2009	GSC	0
Cartographic design	GIS	2008	LLC	12
Cartographic principles/theory	GIS	2007	GRC	5
Cartographic Design	GIS	2005	SDM	11
Cartographic principles	RS	2011	DEN	8
Graphic design	RS	2011	DEN	0
output formatting	RS	2011	DEN	0
Visual enhancements of data	RS	2011	DEN	0
Cartography	RS	2011	MIL	6
Cartography	RS	2009	SAC	5
Design	RS	2009	SAC	0
Total = 18			10 panels	82 members
<b>Communication</b>			70% of panels	
Language	GIS	2014	SLC	6
Communication	GIS	2013	USG	9
Listening	GIS	2009	ARC	8
Communication	GIS	2008	LLC	12
Communication skills -oral	GIS	2007	GRC	5
Communication skills -written, email	GIS	2007	GRC	0
Business communication	RS	2011	DEN	8
Communication, Writing, Presentation	RS	2009	SAC	5
Total = 8			7 panels	53 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Conflict Resolution</b>			20% of panels	
Conflict resolution	GIS	2014	SLC	6
Compromising	GIS	2014	SLC	0
Conflict resolution	RS	2011	DEN	8
Total = 3			2 panels	14 members
<b>Cooperative, people skills</b>			40% of panels	
Cooperative	GIS	2009	ARC	8
Develop People Skills	GIS	2009	ARC	0
Easy-going	GIS	2007	GRC	5
People skills	GIS	2007	GRC	0
Cooperative	RS	2011	DEN	8
facilitation	RS	2011	DEN	0
Group work	RS	2011	DEN	0
Work with others	RS	2011	MIL	6
Total = 8			4 panels	27 members
<b>Critical thinking</b>			80% of panels	
Comprehension	GIS	2014	SLC	6
Decision making	GIS	2014	SLC	0
Critical thinking	GIS	2013	USG	9
Critical thinking	GIS	2009	ARC	8
Critical thinking	GIS	2008	LLC	12
“Think Outside the Box”, "See the big picture"	GIS	2007	GRC	5
Critical thinking	GIS	2007	GRC	0
Critical thinking	RS	2011	DEN	8
Critical thinking	RS	2011	MIL	6
Detective	RS	2009	SAC	5
Total = 10			8 panels	59 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Document interpretation</b>			10% of panels	
Technical document Interpretation	GIS	2014	SLC	6
Legal document interpretation	GIS	2014	SLC	0
2 knowledge, skills & behaviors			1 panels	6 members
<b>Equipment operation &amp; maintenance</b>			30% of panels	
Equipment maintenance	GIS	2014	SLC	6
Plotter operation	GIS	2009	GSC	12
Plotter set-up	RS	2011	DEN	8
Total = 3			3 panels	26 members
<b>Follow procedures</b>			40% of panels	
Follow instructions	GIS	2014	SLC	6
Procurement Procedures	GIS	2009	ARC	8
Flow Chart	GIS	2009	ARC	0
follow procedures	GIS	2007	GRC	5
Process work flow	RS	2011	DEN	8
Total = 5			4 panels	27 members
<b>Keyboarding</b>			30% of panels	
Typing	GIS	2009	GSC	12
Keyboarding	GIS	2009	ARC	8
Keyboarding	GIS	2008	LLC	12
Total = 3			3 panels	32 members
<b>Leadership</b>			30% of panels	
Leadership	GIS	2014	SLC	6
Leadership skills	GIS	2007	GRC	5
Take charge attitude	RS	2009	SAC	5
Total = 3			3 panels	16 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Map reading</b>			50% of panels	
Navigational skills	GIS	2014	SLC	6
Map reading & interpretation	GIS	2013	USG	9
Map reading	GIS	2009	GSC	12
Map interpretation	GIS	2007	GRC	5
Visual interpretation	RS	2009	SAC	5
Total = 5			5 panels	37 members
<b>Multi-tasking</b>			60% of panels	
Multi-tasking	GIS	2013	USG	9
Multi-tasking	GIS	2009	GSC	12
Multitasking	GIS	2009	ARC	8
Ability to multi-task	GIS	2007	GRC	5
Multi-tasking	GIS	2005	SDM	11
Multitasking	RS	2009	SAC	5
Total = 6			6 panels	50 members
<b>Organizational</b>			90% of panels	
Organizational skills	GIS	2014	SLC	6
Organized	GIS	2013	USG	9
Organizational	GIS	2009	GSC	12
Organized	GIS	2009	ARC	8
Organization	GIS	2008	LLC	12
Organized	GIS	2007	GRC	5
Organizational	GIS	2005	SDM	11
Organized	GIS	2005	SDM	0
Organizational	RS	2011	MIL	6
Organizational	RS	2009	SAC	5
Total = 10			9 panels	74 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Presentation, oral communication</b>			80% of panels	
Oral communication (oral, listening, body language)	GIS	2014	SLC	6
Presentation	GIS	2014	SLC	0
Presentation	GIS	2013	USG	9
Public Speaking	GIS	2009	ARC	8
Verbal Communication	GIS	2009	ARC	0
Verbal communication	GIS	2008	LLC	12
Teaching skills	GIS	2007	GRC	5
Oral Communication	GIS	2005	SDM	11
Presentation	GIS	2005	SDM	0
Interviewing	RS	2011	DEN	8
Presentation	RS	2011	DEN	0
Verbal communication	RS	2011	MIL	6
Total = 12			8 panels	65 members
<b>Problem Solving</b>			90% of panels	
Problem Solving	GIS	2014	SLC	6
Problem solving	GIS	2013	USG	9
Problem Solving	GIS	2009	ARC	8
Problem solving	GIS	2009	GSC	12
Problem solving	GIS	2008	LLC	12
Problem solve	GIS	2007	GRC	5
Solution-orientated	GIS	2007	GRC	0
Problem solving	RS	2011	DEN	8
Problem solving	RS	2011	MIL	6
Problem solving	RS	2009	SAC	5
Total = 10			9 panels	71 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Professional development</b>			30% of panels	
Public Relations	GIS	2014	SLC	6
Network with peers	GIS	2007	GRC	5
Participate outside of office (e.g. within user groups)	GIS	2007	GRC	0
Professional development	RS	2011	DEN	8
Total = 4			3 panels	19
<b>Research</b>			30% of panels	
Research	GIS	2013	USG	9
Web Research	GIS	2009	ARC	8
Research techniques	GIS	2008	LLC	12
Scientific methods	GIS	2008	LLC	0
Total = 4			3 panels	29 members
<b>Spatial Thinking</b>			40% of panels	
Spatial Awareness	GIS	2013	USG	9
Spatial awareness	GIS	2009	GSC	12
Spatial thinking	GIS	2009	ARC	8
Spatial aptitude	RS	2009	SAC	5
Total = 4			4 panels	34 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Team Player, interpersonal skills</b>			90% of panels	
People skills	GIS	2014	SLC	6
Mentoring	GIS	2014	SLC	0
Personable	GIS	2013	USG	9
Pleasant Demeanor	GIS	2013	USG	0
Team Player	GIS	2009	ARC	8
Willing to Ask For Help	GIS	2009	ARC	0
Interpersonal	GIS	2009	GSC	12
Networking	GIS	2009	GSC	0
Team player	GIS	2009	GSC	0
Outgoing (friendly)	GIS	2008	LLC	12
Team building	GIS	2007	GRC	5
Team participation	GIS	2007	GRC	0
Can work in team	GIS	2007	GRC	0
Team Player	GIS	2005	SDM	11
Team Player	RS	2011	DEN	8
Team player	RS	2011	DEN	0
Team work	RS	2011	MIL	6
Total = 17			9 panels	77 members
<b>Time management</b>			70% of panels	
Time Management	GIS	2014	SLC	6
Time management	GIS	2013	USG	9
Time management	GIS	2009	GSC	12
Time management	GIS	2008	LLC	12
Time management skills	GIS	2007	GRC	5
Time Management	GIS	2005	SDM	11
Time management	RS	2011	DEN	8
Total = 7			7 panels	63 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Troubleshooting</b>			40% of panels	
Troubleshooting	GIS	2014	SLC	6
Troubleshooting	GIS	2009	GSC	12
Troubleshooting	GIS	2008	LLC	12
Trouble-shooting	RS	2011	DEN	8
Total = 4			4 panels	38 members
<b>Visual interpretation</b>			20% of panels	
Non-color blind	RS	2011	DEN	8
Non-stereo blind	RS	2011	DEN	0
Ability to see in 3-D	RS	2011	MIL	6
Total = 3			2 panels	14 members
<b>Web design &amp; development</b>			20% of panels	
Web design	GIS	2013	USG	9
Web development	GIS	2007	GRC	5
Web content management	GIS	2007	GRC	0
Relevant domain knowledge	GIS	2007	GRC	0
Total = 4			2 panels	14 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

SKILLS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Writing</b>			80% of panels	
Grant writing	GIS	2014	SLC	6
Written Communication	GIS	2014	SLC	0
Technical writing	GIS	2013	USG	9
Technical Writing	GIS	2009	ARC	8
Writing	GIS	2009	ARC	0
Graphing & reporting	GIS	2009	GSC	12
Verbal & written communication	GIS	2009	GSC	0
Technical writing	GIS	2008	LLC	12
Printing legibly	GIS	2005	SDM	11
Technical writing	GIS	2005	SDM	0
Concise	RS	2011	DEN	8
Technical writing	RS	2011	DEN	0
Writing	RS	2011	DEN	0
Written communication	RS	2011	MIL	6
Total = 14			8 panels	72 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Analytical, logical</b>			90% of panels	
Analytical	GIS	2014	SLC	6
Logical	GIS	2014	SLC	0
Analytical	GIS	2013	USG	9
Logical	GIS	2013	USG	0
Analytical	GIS	2009	ARC	8
Analytical	GIS	2009	GSC	12
Logical, intelligent	GIS	2009	GSC	0
Analytical thinker	GIS	2007	GRC	5
Analytical	GIS	2005	SDM	11
Analytical	RS	2011	DEN	8
Analytical	RS	2011	MIL	6
Analytical	RS	2009	SAC	5
Total = 12			9 panels	70 members
<b>Accept criticism</b>			20% of panels	
Take Criticism	GIS	2009	ARC	8
Accept / provide constructive criticism	RS	2011	DEN	8
Total = 2			2 panels	16 members
<b>Adaptable, flexible</b>			70% of panels	
Adaptability	GIS	2014	SLC	6
Flexibility	GIS	2014	SLC	0
Flexible	GIS	2013	USG	9
Flexible	GIS	2009	ARC	8
Adaptable, Flexible	GIS	2007	GRC	5
Adaptability	GIS	2005	SDM	11
Adaptable to change	RS	2011	DEN	8
Flexible	RS	2011	MIL	6
Willingness to change	RS	2011	MIL	0
Total = 9			7 panels	53 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Common sense</b>			40% of panels	
Common sense	GIS	2008	LLC	12
Common sense	GIS	2009	GSC	12
Common sense	GIS	2014	SLC	6
Common sense	RS	2011	DEN	8
Total = 4			4 panels	38 members
<b>Creative</b>			50% of panels	
Creativity	GIS	2013	USG	9
Creativity	GIS	2009	GSC	12
Creative	GIS	2009	ARC	8
Creativity	RS	2011	MIL	6
Creativity	RS	2009	SAC	5
Total = 5			5 panels	40 members
<b>Dedicated, persistent</b>			50% of panels	
Determined	GIS	2013	USG	9
Perseverance	GIS	2013	USG	0
Dedicated	GIS	2009	ARC	8
Diligent	GIS	2009	ARC	0
Perfectionist	GIS	2009	ARC	0
Persistent	GIS	2009	ARC	0
pride in work	GIS	2007	GRC	5
Determined	RS	2011	MIL	6
Tenacity	RS	2011	MIL	0
Tenacity	RS	2009	SAC	5
Total = 10			5 panels	33 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Detail orientated</b>			100% of panels	
Detail oriented	GIS	2014	SLC	6
Detail Oriented	GIS	2013	USG	9
Detail Oriented	GIS	2009	ARC	8
Detail orientated	GIS	2009	GSC	12
Detail oriented	GIS	2008	LLC	12
Attention to detail	GIS	2007	GRC	5
Detail-oriented	GIS	2005	SDM	11
Detail Oriented	RS	2011	DEN	8
Attention to detail	RS	2011	DEN	0
Detail Oriented	RS	2011	MIL	6
Attention to detail	RS	2009	SAC	5
Total = 11			10 panels	82 members
<b>Diplomatic, discretion</b>			30% of panels	
Diplomatic, tactful	GIS	2009	GSC	12
Diplomatic	GIS	2009	ARC	8
Discretion	RS	2011	DEN	8
Total = 3			3 panels	28 members
<b>Dress, etiquette, hygiene</b>			20% of panels	
Dress code	GIS	2008	LLC	12
Hygienic	GIS	2007	GRC	5
Use appropriate office etiquette	GIS	2007	GRC	0
Total = 3			2 panels	17 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Ethical, respectful</b>			50% of panels	
Ethical	GIS	2009	GSC	12
Ethical	GIS	2009	ARC	8
Ethical behavior (integrity)	GIS	2008	LLC	12
Respectful of others	GIS	2007	GRC	5
Ethical	RS	2011	DEN	8
Total = 5			5 panels	45 members
<b>Focused</b>			40% of panels	
Focused	GIS	2013	USG	9
Focus	GIS	2009	ARC	8
Tune out Distractions	GIS	2009	ARC	0
Work under Pressure	GIS	2009	ARC	0
Focused	RS	2011	MIL	6
Focused	RS	2009	SAC	5
Total = 6			4 panels	28 members
<b>Honesty, integrity</b>			10% of panels	
Honesty	GIS	2014	SLC	6
Integrity	GIS	2014	SLC	0
Pass background check	GIS	2014	SLC	0
Total = 3			1 panels	6 members
<b>Inquisitive</b>			10% of panels	
Inquisitive	RS	2011	DEN	8
Total = 1			1 panels	8 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Open minded</b>			20% of panels	
Open-minded	GIS	2007	GRC	5
Open to new tasks, assignments, ideas	GIS	2007	GRC	0
Open-minded	RS	2009	SAC	5
Total = 3			2 panels	10 members
<b>Patience</b>			50% of panels	
Patience	GIS	2014	SLC	6
Patience	GIS	2013	USG	9
Patient	GIS	2009	ARC	8
Patience	RS	2011	MIL	6
Patience	RS	2009	SAC	5
Total = 5			5 panels	34 members
<b>Positive attitude</b>			50% of panels	
Positive demeanor	GIS	2014	SLC	6
Optimistic	GIS	2014	SLC	0
Positive Attitude	GIS	2009	ARC	8
Positive attitude	GIS	2009	GSC	12
Enthusiastic	GIS	2009	GSC	0
Can-do, positive attitude	GIS	2007	GRC	5
Positive Attitude	RS	2011	MIL	6
Optimistic	RS	2011	MIL	0
Total = 8			5 panels	37 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Proactive, initiative</b>			60% of panels	
Initiative	GIS	2014	SLC	6
Ability to Anticipate Needs	GIS	2009	ARC	8
Self-initiated learner	GIS	2007	GRC	5
Self-starter	GIS	2007	GRC	0
Proactive attitude	RS	2011	DEN	8
Self-starter	RS	2011	DEN	0
Take initiative	RS	2011	MIL	6
Self-starter	RS	2011	MIL	0
Take initiative	RS	2009	SAC	5
Take initiative	RS	2009	SAC	0
Total = 10			6 panels	38 members
<b>Professionalism</b>			20% of panels	
Professional	GIS	2013	USG	9
Professionalism	GIS	2008	LLC	12
Total = 2			2 panels	21 members
<b>Reliable, punctual</b>			50% of panels	
Dependability	GIS	2014	SLC	6
Punctuality	GIS	2009	GSC	12
Punctual	GIS	2009	ARC	8
Punctuality	GIS	2008	LLC	12
Punctual	GIS	2005	SDM	11
Total = 5			5 panels	49 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Resourceful</b>			50% of panels	
Resourceful	GIS	2014	SLC	6
Resourceful	GIS	2013	USG	9
Resourcefulness	GIS	2005	SDM	11
Improvise / resourceful	RS	2011	MIL	6
Trouble shooter Jack of all trades	RS	2009	SAC	5
Total = 5			5 panels	37 members
<b>Respectful</b>			30% of panels	
Respectful	GIS	2013	USG	9
Respectful	GIS	2009	ARC	8
Mutual respect	RS	2011	DEN	8
Total = 3			3 panels	25 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Self-motivated</b>			100% of panels	
Saver	GIS	2014	SLC	6
Self-motivated	GIS	2013	USG	9
Self-motivated	GIS	2009	ARC	8
Independent	GIS	2009	ARC	0
Take on Challenging Tasks	GIS	2009	ARC	0
Independent	GIS	2009	GSC	12
Self-motivated	GIS	2009	GSC	0
Self motivation	GIS	2008	LLC	12
Can work independently	GIS	2007	GRC	5
Ability to work independently	GIS	2005	SDM	11
Self-disciplined	GIS	2005	SDM	0
Self-motivated	GIS	2005	SDM	0
Self-motivated	RS	2011	DEN	8
Self-quality control	RS	2011	DEN	0
Work independently	RS	2011	MIL	6
Work independently	RS	2009	SAC	5
Risk taker	RS	2009	SAC	0
Total = 17			10 panels	82 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Sense of humor</b>			30% of panels	
Good sense of humor	GIS	2007	GRC	5
Sense of humor	GIS	2005	SDM	11
Sense of humor	RS	2011	DEN	8
Total = 3			3 panels	24 members
<b>Visionary</b>			10% of panels	
Abstract thinker (outside the box)	GIS	2009	GSC	12
Visionary	GIS	2009	GSC	0
Total = 2			1 panels	12 members
<b>Willingness to learn</b>			70% of panels	
Teachable	GIS	2013	USG	9
Self-improvement	GIS	2009	GSC	12
Willingness to learn	GIS	2009	GSC	0
Ability to learn	GIS	2007	GRC	5
Willingness to learn	GIS	2005	SDM	11
Continuing education	RS	2011	DEN	8
Life-long learner	RS	2011	DEN	0
Willingness to learn	RS	2011	MIL	6
Teachable	RS	2009	SAC	5
Willingness to learn	RS	2009	SAC	0
Total = 10			7 panels	56 members
<b>Work long hours</b>			20% of panels	
Work long hours	RS	2011	MIL	6
Long work hours	RS	2011	DEN	8
Total = 2			2 panels	14 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

ABILITIES & BEHAVIORS	Sector	Year	DACUM Panels	
			Panel	Size
<b>Work under Pressure</b>			20% of panels	
Manage Stress	GIS	2009	ARC	8
Work under Pressure	GIS	2009	ARC	0
Coping	RS	2011	DEN	8
Coping skills	RS	2011	DEN	0
Total = 4			2 panels	16 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Aerial imagery</b>			50% of panels	
Google Earth	GIS	2014	SLC	6
Pictometry	GIS	2014	SLC	0
Google: Earth, Maps, SDK, Drive	GIS	2013	USG	9
Google Earth	RS	2011	DEN	8
Aerial photographs	RS	2011	MIL	6
Aerial photographs	RS	2009	SAC	5
Digital images	RS	2009	SAC	0
Total = 7			5 panels	34 members
<b>Binoculars</b>			10% of panels	
Binoculars	RS	2009	SAC	5
Total = 1			1 panels	5 members
<b>Calculator</b>			40% of panels	
Field calculator	GIS	2014	SLC	6
Calculator	GIS	2009	GSC	12
Field computer	GIS	2008	LLC	12
Calculators,	GIS	2005	SDM	11
Total = 4			4 panels	41 members
<b>Camera</b>			60% of panels	
Camera (GPS)	GIS	2014	SLC	6
Digital Camera	GIS	2009	ARC	8
Camera	GIS	2009	GSC	12
Digital camera	GIS	2008	LLC	12
Camera – digital	GIS	2007	GRC	5
Camera	RS	2009	SAC	5
Total = 6			6 panels	48 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Compass</b>			20% of panels	
Compass	GIS	2007	GRC	5
Compass	RS	2009	SAC	5
Total = 2			2 panels	10 members
<b>Compression software</b>			20% of panels	
Compression / Decompression Software	GIS	2009	ARC	8
Mr. Sid	GIS	2007	GRC	5
Total = 2			2 panels	13 members
<b>Computer</b>			80% of panels	
Computers: Tablet, portable	GIS	2013	USG	9
Computer (laptop, 2 screens)	GIS	2009	ARC	8
Computer Network	GIS	2009	ARC	0
Computer	GIS	2009	GSC	12
Computer workstation	GIS	2008	LLC	12
Computer/Laptop	GIS	2007	GRC	5
Laptops,	GIS	2005	SDM	11
P.C.s,	GIS	2005	SDM	0
Tablet PCs,	GIS	2005	SDM	0
Computers	RS	2011	MIL	6
Desktop computer	RS	2009	SAC	5
Laptop computer	RS	2009	SAC	0
Total = 12			8 panels	68 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Computer aided design (CAD) software</b>			50% of panels	
3D BIM - Model builder	GIS	2014	SLC	6
Auto-Cad	GIS	2014	SLC	0
AutoCAD	GIS	2009	GSC	12
Microstation	GIS	2009	GSC	0
Auto CAD	GIS	2007	GRC	5
Auto CAD,	GIS	2005	SDM	11
IRASC,	GIS	2005	SDM	0
Micro Station,	GIS	2005	SDM	0
CADD-AutoCAD/Microstation	RS	2011	DEN	8
Total = 9			5 panels	42 members
<b>Digitizer</b>			10% of panels	
Digitizer,	GIS	2005	SDM	11
Total = 1			1 panels	11 members
<b>GIS data</b>			20% of panels	
ESRI Data	GIS	2009	ARC	8
Street Map Data	GIS	2009	ARC	0
Digital Elevation Models (DEMs)	RS	2009	SAC	5
Total = 3			2 panels	13 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>GIS extensions</b>			50% of panels	
3D City Models	GIS	2014	SLC	6
CarryMap	GIS	2014	SLC	0
Cityworks extension	GIS	2014	SLC	0
CommunityViz	GIS	2013	USG	9
ET GeoWizards	GIS	2013	USG	0
Specialized Extensions	GIS	2009	ARC	8
Arc2Earth	RS	2011	DEN	8
Analysis tools	RS	2011	MIL	6
Spatial Analyst	RS	2011	MIL	0
Raster math tools	RS	2011	MIL	0
Total = 10			5 panels	37 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>GIS software</b>			100% of panels	
ESRI Suite	GIS	2014	SLC	6
Geoprocessing	GIS	2014	SLC	0
Manifold GIS	GIS	2014	SLC	0
Model Builder (ESRI )	GIS	2014	SLC	0
QGIS	GIS	2014	SLC	0
Global Mapper	GIS	2014	SLC	0
ESRI: ArcSDE, ArcGIS, ArcGIS Online, Geoprocessing tools (clip, bu	GIS	2013	USG	9
GIS Software	GIS	2009	ARC	8
ArcGIS Desktop	GIS	2009	GSC	12
GIS software	GIS	2008	LLC	12
Arc GIS Map	GIS	2007	GRC	5
GIS Software: (ArcGIS, ArcIMS, ArcSDE, ArcPad, ArcGIS Extension:	GIS	2005	SDM	11
ArcGIS	RS	2011	DEN	8
Geomedia	RS	2011	DEN	0
GLOBAL MAPPER	RS	2011	DEN	0
Geodatabase	RS	2011	MIL	6
GIS software	RS	2009	SAC	5
Total = 17			10 panels	82 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>GPS receivers</b>			90% of panels	
GPS equipment	GIS	2014	SLC	6
Survey equipment	GIS	2014	SLC	0
Garmin: GPS Receivers, BaseCamp	GIS	2013	USG	9
Data Collector	GIS	2009	ARC	8
GPS Data Collectors	GIS	2009	ARC	0
GPS	GIS	2009	GSC	12
GPS Receiver	GIS	2008	LLC	12
Variable Rate Technology (VRT)	GIS	2008	LLC	0
GPS	GIS	2007	GRC	5
GPS (Trimble-GeoXT, Sokkia-GR 1000, Static or RTK),	GIS	2005	SDM	11
GNSS instruments	RS	2011	DEN	8
GPS receivers	RS	2009	SAC	5
Total = 12			9 panels	76 members
<b>GPS software</b>			40% of panels	
Mapwel	GIS	2014	SLC	6
Opus-Online	GIS	2014	SLC	0
GPS Software	GIS	2009	ARC	8
Pathfinder Pro	GIS	2007	GRC	5
Total Station	GIS	2005	SDM	11
Total = 5			4 panels	30 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Graphic software</b>			80% of panels	
Adobe Photoshop	GIS	2014	SLC	6
Adobe Professional	GIS	2014	SLC	0
Paint.net	GIS	2014	SLC	0
Adobe: Photoshop, PDF, maps, Flash, SWF, InDesign, Suite	GIS	2013	USG	9
Graphic Software	GIS	2009	ARC	8
Adobe Illustrator	GIS	2009	GSC	12
Adobe Software	GIS	2008	LLC	12
Illustrator	GIS	2007	GRC	5
PageMaker	GIS	2007	GRC	0
Photoshop	GIS	2007	GRC	0
Adobe Illustrator	GIS	2005	SDM	11
Acrobat connect	RS	2011	DEN	8
Adobe suite	RS	2011	DEN	0
Illustrator	RS	2011	DEN	0
Photoshop	RS	2011	DEN	0
Total = 15			8 panels	71 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Image processing &amp; analysis software</b>			80% of panels	
SOCET GXP (BAE)	GIS	2013	USG	9
Image Processing Software	GIS	2009	ARC	8
Photogrammetry Software	GIS	2009	ARC	0
ERDAS Imagine	GIS	2009	GSC	12
Thermal imaging	GIS	2008	LLC	12
ER mapper	GIS	2007	GRC	5
ERDAS Imagine, eCognition	GIS	2005	SDM	11
ENVI	RS	2011	DEN	8
Feature analyst	RS	2011	DEN	0
Imagine	RS	2011	DEN	0
PCI	RS	2011	DEN	0
Socket set/GXP	RS	2011	DEN	0
Frag Stats / Patch Analyst	RS	2009	SAC	5
Image processing software	RS	2009	SAC	0
Leaf Area Index (LAI) 2000	RS	2009	SAC	0
Total = 16			8 panels	70 members
<b>Internet, Cloud, FTP</b>			60% of panels	
Cloud resources	GIS	2014	SLC	6
Citrix (Dell)	GIS	2013	USG	9
Fast Internet (T-10 line)	GIS	2009	ARC	8
FTP Site	GIS	2009	ARC	0
Web Access	GIS	2009	ARC	0
Internet	GIS	2009	GSC	12
Internet	GIS	2008	LLC	12
Internet Browsers	GIS	2007	GRC	5
Total = 8			6 panels	52 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Laser range finder</b>			20% of panels	
Laser Range Finder	GIS	2009	ARC	8
Laser range finder	RS	2009	SAC	5
Total = 2			2 Panels	13 members
<b>Lidar software</b>			20% of panels	
GeoCue	GIS	2013	USG	9
GeoCue	RS	2011	DEN	8
LiDAR analyst	RS	2011	DEN	0
LiDAR tools	RS	2011	DEN	0
Total = 4			2 panels	17 members
<b>Map viewing software</b>			20% of panels	
Oruxmaps	GIS	2014	SLC	6
Tatuk GIS	RS	2011	DEN	8
Total = 2			2 panels	14 members
<b>Office software</b>			70% of panels	
Email	GIS	2014	SLC	6
Microsoft Office	GIS	2014	SLC	0
Office Software (Database, Word Processing)	GIS	2009	ARC	8
Microsoft Office	GIS	2009	GSC	12
Software licensing	GIS	2009	GSC	0
Office software	GIS	2008	LLC	12
MS Office	GIS	2007	GRC	5
MS Office,	GIS	2005	SDM	11
MS office	RS	2011	DEN	8
Total = 9			7 panels	62 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Office supplies &amp; equipment</b>			50% of panels	
Copy machine	GIS	2014	SLC	6
Fax	GIS	2014	SLC	0
Paper Cutter	GIS	2009	ARC	8
Fax machine	GIS	2007	GRC	5
Engineering/Architectural scales	GIS	2005	SDM	11
Clipboards	RS	2009	SAC	5
Manuals & books	RS	2009	SAC	0
Total = 7			5 panels	35 members
<b>Phone, PDA</b>			60% of panels	
Mobile Devices	GIS	2014	SLC	6
Apple: Iphone	GIS	2013	USG	9
Mobile devices (PDA)	GIS	2009	GSC	12
Phone	GIS	2009	GSC	0
Personal Digital Assistant (PDA)	GIS	2008	LLC	12
PDA,	GIS	2005	SDM	11
Pocket PC,	GIS	2005	SDM	0
Personal Digital Assistant (PDA)	RS	2009	SAC	5
Total = 8			6 panels	55 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Plotter</b>			90% of panels	
Plotter	GIS	2014	SLC	6
Plotter	GIS	2009	ARC	8
Plotter	GIS	2009	GSC	12
Plotter	GIS	2008	LLC	12
Plotter	GIS	2007	GRC	5
Plotters,	GIS	2005	SDM	11
Plotter	RS	2011	DEN	8
Plotters	RS	2011	MIL	6
Large format color printer	RS	2009	SAC	5
Total = 9			9 panels	73 members
<b>Printer</b>			50% of panels	
Printer	GIS	2014	SLC	6
Printer	GIS	2009	ARC	8
Printer	GIS	2008	LLC	12
Printers,	GIS	2005	SDM	11
Printer (small format color)	RS	2009	SAC	5
Total = 5			5 panels	42 members
<b>Programming software</b>			20% of panels	
Python	GIS	2007	GRC	5
Unix/Linux	GIS	2007	GRC	0
IDL	RS	2011	DEN	8
Open Source	RS	2011	DEN	0
Python	RS	2011	DEN	0
Total = 5			2 panels	13 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Project management software</b>			10% of panels	
Data Modeling Tools – Visio	GIS	2007	GRC	5
MS Project	GIS	2007	GRC	0
Total = 2			1 panels	5 members
<b>Scanner</b>			70% of panels	
Scanner	GIS	2014	SLC	6
Scanner	GIS	2009	ARC	8
Scanner (large format)	GIS	2009	ARC	0
Scanner	GIS	2009	GSC	12
Scanner	GIS	2008	LLC	12
Scanner	GIS	2007	GRC	5
Scanners,	GIS	2005	SDM	11
Scanners	RS	2011	MIL	6
Total = 8			7 panels	60 members
<b>Security software</b>			10% of panels	
Security Software	GIS	2009	ARC	8
Total = 1			1 panels	8 members
<b>Sensors - photogrammetry &amp; remote sensing</b>			10% of panels	
Clinometer	RS	2009	SAC	5
Densimeter	RS	2009	SAC	0
Fisheye lens	RS	2009	SAC	0
Sensor platforms	RS	2009	SAC	0
Sensors	RS	2009	SAC	0
Spectrometers	RS	2009	SAC	0
Total = 6			1 panels	5 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Server</b>			40% of panels	
Data Storage Device	GIS	2009	ARC	8
Server	GIS	2009	ARC	0
Image Server	GIS	2007	GRC	5
U/M map server	GIS	2007	GRC	0
Servers,	GIS	2005	SDM	11
Server	RS	2009	SAC	5
Total = 6			4 panels	29 members
<b>Stereoscopes</b>			20% of panels	
Stereoscopes	RS	2011	MIL	6
Stereoscopes	RS	2009	SAC	5
Total = 2			2 panels	11 members
<b>Tape: measuring, flagging</b>			20% of panels	
Tape	GIS	2009	ARC	8
Flagging tape	RS	2009	SAC	5
Measuring tape	RS	2009	SAC	0
Tree diameter tape	RS	2009	SAC	0
Total = 4			2 panels	13 members
<b>Tool box</b>			10% of panels	
Tool box	GIS	2014	SLC	6
Total = 1			1 panels	6 members
<b>Topographic maps</b>			10% of panels	
Topographic maps	RS	2009	SAC	5
1 knowledge, skills & behaviors			1 panels	5 members

# DACUM KNOWLEDGE, SKILLS & ABILITIES: GIS & REMOTE SENSING

June, 2014

TOOLS, EQUIPMENT & SUPPLIES	Sector	Year	DACUM Panels	
			Panel	Size
<b>Vehicle</b>			40% of panels	
Truck	GIS	2009	ARC	8
Vehicle	GIS	2009	GSC	12
Vehicle	GIS	2008	LLC	12
Vehicle (4-wheel drive)	RS	2009	SAC	5
Total = 4			4 panels	37 members
<b>Web design software</b>			10% of panels	
Dreamweaver,	GIS	2005	SDM	11
MS Frontpage,	GIS	2005	SDM	0
Total = 2			1 panels	11 members
<b>Total</b>			<b>10 panels</b>	<b>1 members</b>

## DACUM JOB ANALYSIS PANEL INFORMATION

### SLC: Salt Lake Community College, Salt Lake City, UT - GIS Specialist - March 27-28, 2014

Jordan Behunin	GIS Specialist	Carbon County, Price, UT
Kimberly Coburn	Environmental Staff Engineer/GIS Analyst	Engineering, Epic Engineering, UT
Melissa Lasslo	GIS Specialist	Carbon County, Price, UT
Matt Stones	Assistant Utilities Controller, Facilities Management	University of Utah, Salt Lake City, UT
Andrew Thorup	GIS Specialist, Public Works GIS Division	City of West Jordan, West Jordan, UT
John Udseth	Senior GIS/ Intelligence Specialist	Salt Lake City Police Department, Salt Lake City, UT
John Johnson	DACUM Facilitator	National GeoTech Center
Steven Lizotte	Recorder	Salt Lake City Community College

### USG: U.S. Geospatial Intelligence Foundation, Herndon, VA - Geospatial Analyst - October 22-23, 2013

Madhumita Basu	GIS Specialist I, Technical Operations	HydroGeoLogic, Inc., Reston, VA
Dana Christian	Geospatial Analyst	Geospatial Technical Services, Dewberry, Fairfax, VA
Liz Dow	GIS Manager, Community Engagement	KaBOOM!, Washington, DC
Erin Gunzelman	Activity-Based-Intelligence/Geospatial Analyst	Global Analysis and Operations, BAE Systems, Mclean, VA
Emma Jones	Environmental Specialist I, Water Monitoring	Virginia Department of Environmental Quality, Roanoke, VA
Brent Payne	GIS Technician I, GIS & Mapping Section	Department of Information Technology, Fairfax, County Government, Fairfax, VA
Baker Pruiksma	Geospatial Analyst, Global Analysis and Operations	BAE Systems, Arlington, VA
Jeffrey Soffer	Geospatial Analyst, Geospatial Technical Services	Dewberry, Fairfax VA
Rodney Vese Jr	GIS Analyst, Land Acquisition and Planning	Maryland Department of Natural Resources, Annapolis, Maryland
John Johnson	DACUM Facilitator	National GeoTech Center
Charlotte Cain	Recorder	

### DEN: Metro State College, Denver, CO - Remote Sensing Specialist - September 14-15, 2011

Sanchit Agarwal	Director Technical Quality	Sanborn Mapping Inc., Colorado Springs, CO
Dawn R. Betz	Production Coordinator	Digital Globe, Longmont, CO
Mark Bowersox	Technical Application Engineer	ITT Visual Information Solutions, Boulder, CO
Travis Clemens	Project Manager	Senior Navigation Information Analyst, Jeppesen Air Navigation, Englewood, CO
Linda Meyer	Senior Geospatial Analyst	GeoEye, Commercial Production, Thornton, CO
Carol Mladinich	Research Physical Scientist	U.S. Geological Survey, Rocky Mountain Geographic Science Center, Lakewood, CO
Jan Van Sickle	Scientist and author	Van Sickle LLC, Denver, CO
Demetrio Zourarakis	Remote Sensing & GIS Analyst, Kentucky Division of Geographic Information	Commonwealth Office of Technology, Frankfort, KY
John Johnson	DACUM Facilitator	National GeoTech Center
Mark Lombardi	Recorder	Front Range Community College

### MIL: ASPRS National Conference, Milwaukee, WI - Remote Sensing Specialist - May 1-2, 2011

Dr. Indumathi Jeyachandran	Visiting Researcher	University of Utah, Santa Clara, CA
Thomas B. Jones	Principal	Terra-Scribe Solutions LLC, West Bend, WI
Erin Kees	Lidar Data Processor – Field Team Lead	GeoDigital International, Field Operations Group, Rochester, NY
George A. Riner	Research Tech I, Geography / Center for Interdisciplinary Geospatial Analysis	Sonoma State University, , Rohnert Park, CA
Robin E. Rodgers	Physical Scientist	US Army Engineer Research & Development Center, Alexandria, VA
Mary Sitton	President, Imagery Analyst	CMS, Environmental Research, Inc, Aerial Photo Analysis, Linden, VA
John Johnson	DACUM Facilitator	National GeoTech Center
Ann Johnson	Recorder	National GeoTech Center
Jeannie Allen	Recorder	NASA

## DACUM JOB ANALYSIS PANEL INFORMATION

### SAC: Mission College, Santa Clara, CA - Remote Sensing Specialist - August 20 - 21, 2009

Charles Clancy	GIS/Remote Sensing & Geodesy Analyst	Chevron Energy Technology Company, San Ramon, CA
Lawrence Fox III	Emeritus Professor and Senior Advisor	Institute for Spatial Analysis, Humboldt State University, Arcata, CA
Kevin Koy	Manager	Geospatial Innovation Facility, U. C. Berkeley, Berkeley CA
Laura E. P. Rocchio	Senior Outreach Scientist	Science Systems Applications Inc., Los Angeles, CA
Cindy Schmidt	Research Scientist	San Jose State Foundation/NASA, NASA Ames Research Center, Moffett Field, CA
John Johnson	DACUM Facilitator	GIS Workshop
Chris Lewis	Recorder	iGETT
Chris Cruz	Recorder	West Valley College

### ARC: American River College, Sacramento, CA - Senior GIS Analyst - June 4-5, 2009

David Hanson	Soil Scientist/GIS Specialist	U.S. Bureau of Reclamation, Sacramento CA
Kris Higgs	Research Program Specialist 1 (GIS)	Calif. Emergency Management Agency
Nathan Jennings	Senior GIS Analyst	City of Sacramento
Diane Mastalir	Sr. GIS Analyst	Wildlands, Inc., Rocklin, CA
Ramona Navarrete	GIS Analyst / Mid-Mgr	City of Folsom, CA
Patrick J. Parsons,	Research Analyst GIS II	Dept of Water Resources, Red Bluff, CA
Geney Terry	GIS Analyst II	County of El Dorado, Placerville, CA
Linda Wright	GIS Analyst II	County of El Dorado, Placerville, CA
John Johnson	DACUM Facilitator	GIS Workshop
Ann Johnson	Recorder	iGETT
Chris Lewis	Recorder	iGETT

### GSC: Gainesville State College, Atlanta, GA - GIS Technician - January 16-17, 2009

Azar Khani	GIS Specialist III	Fulton County Government
Brannon Schnelle	GIS Analyst	Jordan, Jones & Goulding
Collin Horace	GIS Developer/Analyst	CH2MHILL
Donald I. M. Enderle	GIS Analyst	Photo Science Inc.
Dwight Lanier	GIS/Environmental Science Laboratory Coordinator	Gainesville State College
Eric McRae	Director	Information Technology Outreach Services
Lisa Jackson	Information Analyst III	Center for GIS, Georgia Institute of Technology
Lisbeth Ruiz-Nunez	Regional Resource Info. Coordinator	US Forest Service
Mark Lane	GIS Manager	Hall County Government
Melanie Tabb	GIS Administrator	Gwinnett County
Ron Pate	Registered Land Surveyor	n/a
Tripp Corbin	Vice President GIS	Keck & Wood, Inc.
John Johnson	DACUM Facilitator	National GeoTech Center
Carol Kraemer	Recorder	Gainesville State College
Georgia URISA	Validation Survey - 179 Respondents	Web-based survey conducted in March, 2009
National Science Foundation	Sponsor (Advance Technology Education)	

## DACUM JOB ANALYSIS PANEL INFORMATION

### LLC: Lake Land College, Mattoon, IL - GIS Technician - November 19-20, 2008

Adam Pfister	GIS Analyst	Archer Daniels Midland Company
Brad McVay	GIS Specialist	Illinois Water Survey
Brooke Ferguson	former GIS Specialist	County Government
Curt Reynolds	GIS Specialist-Technical Manager III-GIS application developer	Illinois Department of Transportation
Doug Ratermann	Land Surveyor	Henry, Meisenheimer & Gende, Inc.
Jay Donnelly	GIS Coordinator/Technician	Clinton County GIS Office
Jill Zerrusen	n/a	Effingham County Tax Assessors Office
Kevin McReynolds	GIS Technician	Coles County Regional Planning Commission
Molly & Dennis Godar	Agriculture Consultants	n/a
Roger Reed	Programming-GIS Technician	USDA-Effingham County
Travis Schackmann	CAD/GIS Technician	EJ Water Cooperative
John Johnson	DACUM Facilitator	National GeoTech Center
Kay Hanley	Recorder	Lake Land College
Illinois GIS Association	Validation Survey - 89 Respondents	Web-based survey conducted in April, 2009
National Science Foundation	Sponsor (Advance Technology Education)	

### GRC: Green River Community College, GIS Technician - June 12, 2007

Ann Boyd	Lead GIS Analyst	City of Bellevue, WA
Beth Carpenter	Engineering Technician	City of Sammamish Public Works, WA
Blane Moore	GIS Analyst	PACE Engineers Inc., Kirkland, WA
Glenn Brooks	Geographic Information Officer	Northwest Response, Woodinville, WA
Jennifer Recco	Planning Technician	City of Puyallup, WA
Erik Tingelstad	DACUM Facilitator	Highline Community College
Nancy Warren	DACUM Facilitator	Highline Community College

### SDM: San Diego Mesa College, San Diego, CA - GIS Technician - January 13-14, 2005

Colleen Larsen	GIS/Mapping Specialist II	Engineering, Padre Dam Municipal Water District
David Hulten	GIS Technician	City of Encinitas
Dennis Larson	Senior GIS Technician	Technical Services, San Diego Association of Governments
Drew Dowling	GIS Analyst	SanGIS
Fred McCamic	GIS Analyst	Public Works, County of San Diego
Gina Durizzi	Principal Survey Aid/GIS Coordinator	Engineering Capital Projects, Field Division, City of San Diego
Jason McNeil	GIS Technician II	Information Services, City of Escondido
Lisa Canning	Senior Engineering Aide	Metropolitan Waste Water Division, City of San Diego
Melanie Casey	GIS Analyst	Planning and Land Use, County of San Diego
Nancy Ross	GIS Specialist	Management Information Services, City of Chula Vista
Sue Carnevale	Senior Regional Planner/GIS Analyst	Technical Services, San Diego Association of Governments
John Johnson	DACUM Facilitator	GISWS, Encinitas, CA
Sara Halstead	DACUM Co-facilitator	Employee Training Institute, San Diego, CA
San Diego Regional GIS Council	Validation Survey - 150 Respondents	Mail-in survey conducted April/May, 2005