



# UMETT GIS Response

## *Standard Operating Guide (SOG)*

### Executive Summary

The Utah Mapping Emergency Technical Team is a group of GIS professionals who recognize the potential threats of natural and man-made disasters to our communities and understand that geographic information is essential to an effective response and recovery. Therefore, UMETT seeks to proactively share information on best practices for GIS professionals who may be called to support an emergency response. Furthermore, UMETT seeks to establish a response team in which members can provide assistance other jurisdictions during an emergency response. This document will establish the credentials and training requirements for members to participate, establish procedures by which this resource will be activated, and provide details as to the standard products it is expected this resource will be expected to produce.

This document was produced by the UMETT Coordinating Board based on information from other GIS response groups and local input. It is necessary to clarify the Geographic Information System (GIS) business needs and functional standards for GIS in support of all-hazard incidents. These guidelines were developed to provide consistency and quality in delivery of GIS products and services. The *guidelines* focus on the work performed by GIS professionals to fulfill the needs of the emergency response within an Emergency Operations Center or similar incident management organization. Topics covered in this document include GIS data management, map product development and analysis, incident GIS documentation and archiving, team transition and general guidance for the GIS *Specialist*, or those who are performing the mapping function at the incident or through remote response means.

This document contains guidelines and expectations that should be met by all participating members and agencies. However, it is acknowledged that under some extenuating circumstances, compliance with these guidelines may not be possible, or in the best interest of the response teams.

# Mission Statement

UMETT is a partnership of government and private geospatial professionals with a mission of providing cross-jurisdictional professional mapping services and data in support of decision-making during emergency response and mitigation in Utah.

## About UMETT

The goals of UMETT are:

- Discuss and share best practices and lessons learned from using GIS during a disaster response
- Define essential datasets and other geospatial tools and products to be used to support emergency or disaster response
- Establish systems and procedures, adhering to best practices, to effectively share data and maps
- Collaborate with emergency managers and other responders to promote understanding of their information needs and educate them on the capabilities GIS professionals can provide
- Identify appropriate training for GIS professionals to obtain skills to better support an emergency
- Coordinate and share critical geographic information during an emergency or disaster response according to established procedures
- Utilize training and procedures to establish a volunteer group that can assist other jurisdictions in Utah during an emergency

## UMETT Response Team

The UMETT Response Team is designed to provide mapping support for all hazard types and all incidents. This may be localized incidents handled by a single jurisdiction, or a disaster event handled by multiple jurisdictions or agencies. The *SOGs* for response will be the same.

Members must meet the minimum training requirements and credentials to become a responder. Members may be called upon to help other members handle an event outside of their jurisdiction. Membership and training are voluntary and deployment to an outside event is not mandatory but is handled on an “as-available” basis. Members may receive assistance for their own jurisdiction by requesting UMETT support through the established process. Participation as a UMETT member is not required to receive support from the UMETT response team.

# Introduction

This document was produced by the UMETT Coordinating Board to provide an organizational framework for the UMETT response team, and provide guidance for the use of GIS on all-hazard emergency response events.

The purpose of this document is to standardize GIS products and methods and improve service to decision makers, including Emergency Managers, Incident Commanders, and others who rely on this critical information. The absence of SOGs for GIS support on incidents has created consistency-in-service issues such as data management problems for *IMTs*—especially during team transition periods. The primary audience for this document is the *GIS Specialist* performing work on an all-hazards incident, emergency managers and other members of the *Incident Management Team* who need to display incident information, and other personnel reliant on mapping and GIS analysis products during emergency response.

The following topics are addressed:

1. Incident Procedures – describes the hierarchy of the EGRT command structure , the activation process for assigning EGRT members to an incident, and the expectations of the EGRT personnel on-site.
2. Incident Responsibilities – includes guidelines on when to expect deployment, how to check in and out of an incident, how to act while deployed, paperwork associated with an incident, and guidelines on handling sensitive data.
3. Data Catalog – identifies map templates and geographic data from various sources that may be used in incident mapping. This includes standard statewide datasets, region 1 specific datasets, local datasets, and file naming conventions used during the planning and incident scenarios.
4. Standard Map Products – describes standard and ad-hoc maps that may be produced for various incident types and important details to consider for each. A future document will show examples and additional details for each type of map or analysis.
5. Membership and Training – designates the minimum training requirements for team membership, and discusses the map templates and stock data that can be used for primary mapping, as well as the importance of drills and tabletop exercises.

The training segment of this manual will serve to provide exercise and drill materials for practice and pre-incident training. Each of the response types shown in the training section have been researched with response personnel familiar with each category. For instance, the unit on mapping for a chemical spill response was researched with the NEFDA hazmat response team to identify their expectations of GIS mapping during this type of response.

This document is subject to review and modification. Requests for changes will be evaluated following each incident or every year if there are no response team activations. This review is necessary to verify that the *SOGs* continue to meet the needs of the *incident management teams* and the GIS responders.

Emergency events are handled by local jurisdictions, and the existence of this regional team doesn't change that. The local GIS responders for the affected jurisdiction(s) have the primary responsibility and are in charge. If they are overwhelmed, they may have their Emergency Management personnel contact the UMETT Coordinating Board and request help. If it is a large or multi-day response, the UMETT Board can coordinate additional GIS responders.

# Chapter 1 – Incident Procedures

## **Purpose:**

This chapter contains information on the activation and assignment process for UMETT members to an incident, the hierarchy of the EGRT command structure, and the expectations of the UMETT personnel remotely or on-site.

## **Specifications:**

The organization structure includes the following membership types with a general description of their duties:

### *Coordinating Board*

The UMETT coordinating board is comprised of a chair and two directors. This board is collectively responsible for maintaining a list of UMETT membership, coordinating quarterly meetings and other training efforts, maintaining documentation of members that have completed UMETT training and are available for response, contacting and making assignments of UMETT responders to incidents when requested; supporting the participation of UMETT in local drills and exercises. The coordinating board members will serve as the first point of contact for UMETT activation.

### *General Membership*

UMETT members are GIS professionals from both public and private sector throughout Utah who recognize their potential role in providing useful information during an emergency response. Members seek to share best practices and improve coordinating capabilities between jurisdictions.

Members wishing to participate in a UMETT response are expected to complete the required training and abide by the guidelines set forth in this document (see Chapter 5).

UMETT Members will remain on the active response list for as long as they are willing to volunteer. Membership terms do not expire, however members will be required to keep their contact information up to date in the UMETT database to remain active. While not required, it is advised that members participate in local and regional drills and exercises as often as allowable.

## **Procedures:**

If a local, county, or state agency responds to an incident and determines that they need GIS

support, they may contact UMETT for assistance. It is anticipated that this request will be made by a local (city or county) emergency manager to the UMETT coordinating board.

Note that the UMETT system does not allow for self-deployment. UMETT members are not to show up to an incident unless they have specifically been requested to do so.

Note also that the UMETT system does not provide or guarantee reimbursement of expenses for deployment. Some local or regional incidents may fall into a reimbursable category and some may not.

All member responses are voluntary and any member may pass on an assignment for any reason. The protocol for requesting GIS support is the same for both scenarios.

1. The person making the request shall contact the UMETT Coordinating Board and provide the following information to help them choose members for assignment.

Location	
Incident Type	
Number of Responders Requested	
On-site or Remote Assistance	
Expected Length of Event	
Resources Available	
Resources Needed	

2. Upon receiving the request, the UMETT Coordinating Board will send the requestor an acknowledgment of receipt indicating that they will contact their members and reply again within 4 hours.
3. The UMETT Coordinating Board will then contact members to notify them of the request, including the information provided by the requestor.
4. The UMETT Coordinating Board will assess the number of member responses and determine which individuals will be assigned to the incident.
5. The selected team will respond to the incident and maintain contact with the UMETT Coordinating Board as needed. The Board, in turn, will maintain contact with the local EM to discuss ongoing needs and additional details.

GIS support personnel assisting on an incident will adhere to ICS standards, including chain of command, unity of command, and proper documentation protocols.

# Chapter 2 – Incident Responsibilities

## **Purpose:**

This chapter defines the responsibilities of UMETT members during an assignment, which are guided by the overarching goal of delivering the highest standard of work and professionalism in the most efficient manner possible.

## **Specifications:**

UMETT members should always remember the guidelines provided by the Incident Command System (ICS) and that all work performed on behalf of an agency utilizing UMETT is considered confidential. Any work completed by UMETT members and intended for release to other agencies or the public must be approved by the member's immediate supervisor as per ICS.

## **Procedures:**

UMETT members should always follow check-in and check-out protocol when reporting to an incident. In similar fashion, members should be prepared to handle multiple requests, appropriately prioritize those requests, brief other personnel (especially GIS personnel) on your tasks and assignments, and make smooth transitions when either replacing personnel or being replaced between operational periods.

### *Responding / Checking in to an incident*

When confirmed for deployment, the UMETT member should receive the following information:

- Incident type
- Travel authorization
- Specific job assignment
- Name and phone number of supervisor
- Reporting location and expected time of arrival
- Transportation arrangements (if other than personal vehicle)
- Contact procedures during travel
- Expected duration of assignment
- Expected working conditions

The UMETT Coordinating Board should notify the responding member(s) of any changes to the information listed above, and the member should contact the Coordinating Board if their status changes prior to arrival at the incident.

Members deployed on an incident should report to the location specified in the assignment details and check-in to the incident (an ICS-211 form or similar check-in/out sheet should be available at the location; however, if it is located elsewhere, the member should check-in to the incident as soon as possible to ensure accountability and accurate documentation). Below are the fields used on form 211 and an explanation for each field.

Block Number	Block Title	Instructions
1	<b>Incident Name</b>	Enter the name assigned to the incident.
2	<b>Incident Number</b>	Enter the number assigned to the incident.
3	<b>Check-In Location</b> <input type="checkbox"/> Base <input type="checkbox"/> Staging Area <input type="checkbox"/> ICP <input type="checkbox"/> Helibase <input type="checkbox"/> Other	Check appropriate box and enter the check-in location for the incident. Indicate specific information regarding the locations under each checkbox. ICP is for Incident Command Post.  Other may include...
4	<b>Start Date/Time</b> <ul style="list-style-type: none"> <li>• Date</li> <li>• Time</li> </ul> <b>Check-In Information</b>	Enter the date (month/day/year) and time (using the 24-hour clock) that the form was started.  Self explanatory
5	<b>List single resource personnel (overhead) by agency and name, OR list resources by the following format</b>	Enter the following information for resources:  OPTIONAL: Indicate if resource is a single resource versus part of Strike Team or Task Force. Fields can be left blank if not necessary.
	<ul style="list-style-type: none"> <li>• State</li> </ul>	Use this section to list the home State for the resource.
	<ul style="list-style-type: none"> <li>• Agency</li> </ul>	Use this section to list agency name (or designator), and individual names for all single resource personnel (e.g., ORC, ARL, NYPD).
	<ul style="list-style-type: none"> <li>• Category</li> </ul>	Use this section to list the resource category based on NIMS, discipline, or jurisdiction guidance.
	<ul style="list-style-type: none"> <li>• Kind</li> </ul>	Use this section to list the resource kind based on NIMS, discipline, or jurisdiction guidance.
	<ul style="list-style-type: none"> <li>• Type</li> </ul>	Use this section to list the resource type based on NIMS,



		discipline, or jurisdiction guidance.
	<ul style="list-style-type: none"> <li>Resource Name or Identifier</li> </ul>	Use this section to enter the resource name or unique identifier. If it is a Strike Team or a Task Force, list the unique Strike Team or Task Force identifier (if used) on a single line with the component resources of the Strike Team or Task Force listed on the following lines. For example, for an Engine Strike Team with the call sign "XLT459" show "XLT459" in this box and then in the next five rows, list the unique identifier for the five engines assigned to the Strike Team.
	<ul style="list-style-type: none"> <li>ST or TF</li> </ul>	Use ST or TF to indicate whether the resource is part of a Strike Team or Task Force. See above for additional instructions.
6	<b>Order Request #</b>	The order request number will be assigned by the agency dispatching resources or personnel to the incident. Use existing protocol as appropriate for the jurisdiction and/or discipline, since several incident numbers may be used for the same incident.
7	<b>Date/Time Check-In</b>	Enter date (month/day/year) and time of check-in (24-hour clock) to the incident.
8	<b>Leader's Name</b>	<ul style="list-style-type: none"> <li>For equipment, enter the operator's name.</li> <li>Enter the Strike Team or Task Force leader's name.</li> <li>Leave blank for single resource personnel (overhead).</li> </ul>
9	<b>Total Number of Personnel</b>	Enter total number of personnel associated with the resource. Include leaders.
10	<b>Incident Contact Information</b>	Enter available contact information (e.g., radio frequency, cell phone number, etc.) for the incident.
11	<b>Home Unit or Agency</b>	Enter the home unit or agency to which the resource or individual is normally assigned (may not be departure location).
12	<b>Departure Point, Date and Time</b>	Enter the location from which the resource or individual departed for this incident. Enter the departure time using the 24-hour clock.
13	<b>Method of Travel</b>	Enter the means of travel the individual used to bring

		himself/herself to the incident (e.g., bus, truck, engine, personal vehicle, etc.).
<b>14</b>	<b>Incident Assignment</b>	Enter the incident assignment at time of dispatch.
<b>15</b>	<b>Other Qualifications</b>	Enter additional duties (ICS positions) pertinent to the incident that the resource/individual is qualified to perform. Note that resources should not be reassigned on the incident without going through the established ordering process. This data may be useful when resources are demobilized and remobilized for another incident.
<b>16</b>	<b>Data Provided to Resources Unit</b>	Enter the date and time that the information pertaining to that entry was transmitted to the Resources Unit, and the initials of the person who transmitted the information.
<b>17</b>	<b>Prepared by</b> <ul style="list-style-type: none"> <li>• Name</li> <li>• Position/Title</li> <li>• Signature</li> <li>• Date/Time</li> </ul>	Enter the name, ICS position/title, and signature of the person preparing the form. Enter date (month/day/year) and time prepared (24-hour clock).

UMETT members responding to incidents are required to provide their own equipment, including hardware, software, and other tools necessary for completing GIS projects away from their usual work environment (one common exception to this is a plotter; however, if the member or his/her agency has a mobile plotter approved for such use, it may be a welcome asset to have on hand for the jurisdiction or agency receiving assistance). Many emergency management agencies require or encourage their personnel to assemble “go-bags” or “go-kits” that contain all such equipment and can be easily retrieved and transported for deployment. UMETT members are strongly encouraged to adopt this practice, and a list of recommended items is provided below:

- Laptop with sufficient processing and graphics capabilities (for running Esri software)
- An up-to-date or supported version of ArcGIS for Desktop (or ArcGIS Pro as suited to the member’s abilities, provided the products remain compatible with ArcGIS for Desktop)
- An external mouse
- An external hard drive and/or USB drive
- Headphones and/or bluetooth headset
- A Mi-Fi device or other mobile hotspot capability
- Charge cords and adapters for your devices
- A notepad and writing instruments (including permanent markers, highlighters, and varied colors for marking paper maps)
- Blue painters tape (for mounting wall maps)

- Scotch tape
- Stapler
- Paper clips
- Manilla folders

### *Performing duties during incident*

UMETT members respond on a voluntary basis; however, they are nonetheless ambassadors of the GIS industry and community, and they represent the Utah Geographic Information Council (UGIC) inasmuch as they are acting members of the UMETT committee of UGIC. Therefore, members should always be courteous, professional, mindful of their duties, and they should maintain a high standard of ethics, performing the tasks as directed by their supervisor. Members are encouraged to make recommendations for improving map products and processes, but they are discouraged from contending with their supervisors if such recommendations are dismissed or ignored. UMETT members are there to assist and support, not to question and disrupt.

Members will be shown their work area and introduced to their supervisor. Members should remain in their work area and notify their supervisor if they will be away from their work station for an extended period.

All work requests should come from the member's immediate supervisor (unity of command) to ensure proper prioritization, and requests should come through the appropriate channels (chain of command). Ideally, work requests should be documented in writing (often done using an ICS-213 (General Message)) and used to verify that the final product meets the request, but some will inevitably be verbal only. In either case, members should document their own work using an ICS-214 (Activity Log), which will remain with the incident documentation for tracking and finance purposes. Logging activities also helps track the progress of requests spanning more than one operational period and provides a point of reference for post-incident analysis (hotwashes, after-action reports, etc.). An explanation of the fields (blocks) included in ICS-214 is found below:

Block Number	Block Title	Instructions
1	<b>Incident Name</b>	Enter the name assigned to the incident.
2	<b>Operational Period</b> <ul style="list-style-type: none"> <li>• Date and Time From</li> <li>• Date and Time To</li> </ul>	Enter the start date (month/day/year) and time (using the 24-hour clock) and end date and time for the operational period to which the form applies.
3	<b>Name</b>	Enter the title of the organizational unit or resource designator (e.g., Facilities Unit, Safety Officer, Strike Team).
4	<b>ICS Position</b>	Enter the name and ICS position of the individual in charge of the Unit.

<b>5</b>	<b>Home Agency</b> (and Unit)	Enter the home agency of the individual completing the ICS 214. Enter a unit designator if utilized by the jurisdiction or discipline.
<b>6</b>	<b>Resources Assigned</b>	Enter the following information for resources assigned:
	• Name	Use this section to list the home State for the resource.
	• ICS Position	Use this section to list agency name (or designator), and individual names for all single resource personnel (e.g., ORC, ARL, NYPD).
	• Home Agency (and Unit)	Use this section to enter the resource's ICS position (e.g., Finance Section Chief).
<b>7</b>	<b>Activity Log</b> <ul style="list-style-type: none"> <li>• Date/Time</li> <li>• Notable Activities</li> </ul>	<ul style="list-style-type: none"> <li>• Enter the time (24-hour clock) and briefly describe individual notable activities. Note the date as well if the operational period covers more than one day.</li> <li>• Activities described may include notable occurrences or events such as task assignments, task completions, injuries, difficulties encountered, etc.</li> <li>• This block can also be used to track personal work habits by adding columns such as "Action Required," "Delegated To," "Status," etc.</li> </ul>
<b>8</b>	<b>Prepared by</b> <ul style="list-style-type: none"> <li>• Name</li> <li>• Position/Title</li> <li>• Signature</li> <li>• Date/Time</li> </ul>	Enter the name, ICS position/title, and signature of the person preparing the form. Enter date (month/day/year) and time prepared (24-hour clock).

Upon receiving a work request, UMETT members should discuss the request with their supervisor to satisfy the following:

- Determine feasibility of the request
- Verify the request against available data
- Identify restrictions or security issues related to the request
- Make sure you understand the request—it may be necessary to speak directly with the requestor to clarify the parameters of the request
- Confirm the time frame for the request—prioritize, request additional resources as needed, and communicate an adjusted deadline if necessary

When completing a work request, UMETT members should consider the following:

- What data is needed? (review existing sources and determine any collection needs)
- Does the request require analysis or is it data compilation and map creation?
- Does the map or information product (i.e. statistics, tables, reports) include sensitive or restricted data? (For Official Use Only (FOUO))

- Does the map or information product need to be reviewed in draft form prior to printing/distributing?
- Are there any special instructions regarding delivery of the final product?

Documentation for an incident should be retained by the Planning Section; however, it is recommended that UMETT members keep a copy of their documentation for their own records.

#### *Briefing your replacement and checking out*

If an incident will span more the one operational period and require continued GIS support, the UMETT Coordinating Board will arrange for additional single resources (personnel) to be deployed. It is critical that members brief their replacement(s) before demobilizing and concluding their deployment. This will ensure continuity for incoming members as they take over the tasks and assignments. The briefing should include:

- Current status of the incident
- Name of supervisor and contact information
- Status of any open work requests
- Folder location of all incident data and files
- Name and location of any specialized data that is being used or has been collected
- Summary of maps or information products created thus far (referencing the 214)
- Overview of any map templates being used

#### *Check-Out procedures*

When members have completed their assignments and are released from an incident, they should complete the full check-out process, which includes the following:

- Complete demobilization forms
- Return all equipment that does not belong to the member personally
- Sign off on all completed assignments and report these to their supervisor
- Pack up any personal items
- Sign out of the incident on the ICS-211 used to originally sign in
- Return to home agency

Successful completion of a deployment includes performing all of the tasks mentioned above. It is important to note that not all persons in an EOC are familiar with the duties of GIS specialists; therefore, requests that members receive may not fit the member's standard expectations. During the incident, it may be necessary for the UMETT member to brief other personnel in the EOC on the capabilities of GIS to ensure that any geospatial tasks are being done in the most efficient and appropriate manner possible.

By the same token, work requests may not fit neatly into the standard ICS maps typically encountered on an incident (Chapter 4 discusses these in detail). Therefore, members may need to work with other sections--particularly Operations--to develop maps and information products that meet the needs of the incident. This can include incorporating new information and techniques on-the-fly during an incident. UMETT members should be prepared to adapt to the needs of the incident and accommodate non-standard requests whenever possible.

# Chapter 3 - Data Catalog

## Purpose:

Establish a data catalog that can be used for emergency response.

## Specifications:

Responding members of UMETT will use data from the Utah Automated Geographic Reference Center (AGRC) for base layers relevant to the incident. In addition, local GIS personnel may also provide data to the responding members as needed.

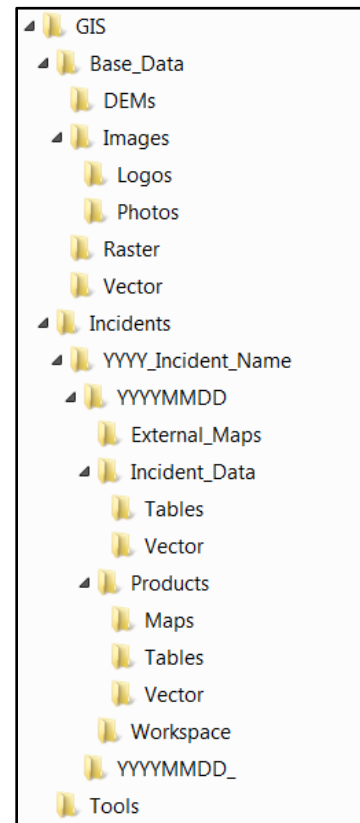
As per ICS standards, responding UMETT members will recommend data structure guidelines and documentation protocol to the requesting jurisdiction/agency (see folder structure image below). However, members will make reasonable efforts to integrate with the jurisdiction/agency's internal data structure while adhering to the following general standards:

- A project folder with the incident name
- A file geodatabase within the project folder
- MXDs intuitively named with accompanying date, timestamp, and page size
- Exported maps organized by date created

When the requesting jurisdiction/agency does not have established data structure standards, UMETT members will use the following structure outlined in the image on the right to organize incident-related data.

## Procedures:

For most response activities, the standard AGRC datasets will be sufficient. However, in some circumstances, more specialized data may be required to create effective map products, in which case, local authoritative data sources should be sought out where available. As per the National Alliance for Public Safety GIS (NAPSG) Foundation, reasonable efforts should be made to capture metadata for any newly created datasets. The following NAPSG guidelines regarding metadata should be followed (taken from the Federal Geographic Data Committee's (FGDC) "Content Standard for Digital Geospatial Metadata"):



*The Content Standard for Digital Geospatial metadata (CSDGM) is the current US Federal metadata*

*standard and has been adopted and implemented beyond the federal level by local, state, territorial, and tribal agencies. Agencies should strive to adopt and implement this standard in geospatial support for planning and preparedness activities, and when feasible for incident management and coordination. NAPSG Foundation recognizes the limitations under which GIS staff operate during incident management and coordination support, and that metadata creation takes a secondary priority. It is often times impossible to fully encode all entries required for FGDC-compliant metadata. Alternatively, GIS staff can take a minute to add a paragraph describing the bulleted items under "Modified Base Data", which enables others to understand what was done to the data to accomplish the mission. This information, and the use of standard file naming conventions, for all incident data are critical for creating FGDC-complaint metadata after the incident.*

The following considerations should be noted when working with external datasets:

- Verify that all data complies with copyright and trademark laws.
- Attribute any contributing private sector sources on all maps.
- Identify any data that is sensitive or proprietary and cannot be distributed to the public.

# Chapter 4 – Standard Map Products

## **Purpose:**

This chapter will discuss some of the mapping products that may be required on incident responses.

## **Specifications:**

The following is a general description of common map products requested during an emergency response. This is not intended to be an exhaustive list of potential map needs. UMETT members will need to be flexible in creating these maps as incidents are highly variable and end-users may have specific needs or preferences. The primary use and audience should drive the focus of the maps. UMETT will develop mapping templates and map product descriptions for many of the incident types you may encounter, which can be modified based on datasets that are available and incident needs.

## **Procedures:**

UMETT members may be asked to produce a variety of map and analysis products, which generally fall into one of three frequency categories:

### **Continually updated**

- Common Operation Picture/Status Map

### **Cyclical: produced or updated at regular intervals**

- Incident Action Plan Map
- Briefing Map
- Situation Report Map

### **Ad Hoc maps: produced as needed**

- Damage Assessment
- Impact Analysis Map
- Critical Infrastructure Map
- Transportation Status Map
- Air Operations Map
- Land Ownership Map
- Public Information Map
- Fire Perimeter Map



- Incident Progression Map
- Facilities Map

Following is a brief description of these maps and how/when they should be produced.

A **Common Operational Picture** map or display is updated frequently as information comes in. The intent is to give a simple and concise overview of the current conditions of the incident. THE COP can be a printed map but is more commonly displayed on a screen in the Emergency Operations Center or similar environment. A live map facilitates quick updates regarding the status of the incident that will be relevant to all individuals and organizations involved in the incident. A COP map is well suited to a web-based environment that allows for publishing quick data updates and ease of sharing with other agencies. When available, tools such as ArcGIS Online (AGOL) or other online mapping application might be suitable environments.

While we anticipate UMETT members will commonly be assigned to the Planning Section, they may be assigned to the Operations Section and perform this function in the EOC. In most scenarios and single member can handle this assignment, but in a large or fast moving incident it may be necessary to have two or more people working on this task – one updating the display while the others gather and compile the information necessary.

The **Incident Action Plan** provides incident-related information to be included in an Incident Action Plan which guides the efforts of all units in the response. It provides overview information of the incident and describes the plan of action for the upcoming operational period. They are typically produced at smaller page scales for inclusion in the Incident Action Plan. The IAP map is of highest priority, and must effectively communicate critical geographic feature relationships and incident managements objectives on the incident. This could include incident location and impact areas, related road closures, and other points of interest displayed over a basemap. It may also include field assignments, instructions, and safety concerns for incident responders. On incidents that span multiple operational periods, a new IAP may be produced at each change of command.

These are typically done in the Planning Section and will show actions that different sections will be performing to bring the incident under control. It should have clear steps listed and labels on the map to identify various features. It can hold some very complex information but should still be easy to read. The IAP is distributed to all units involved in the incident to coordinate their efforts.

A **Briefing Map** should be displayed in the briefing area and to provide current information during operational briefings. It should provide as much information as possible while remaining readable. This could include incident location and impact areas, related road closures, and other points of interest displayed over a basemap and other specifics related to the current briefing. It is often a large-format printed map of the incident area to provide context for topics discussed during an incident briefing. Clear, readable text and symbology and reduced clutter are important for large scale briefing maps. Smaller formats may also be used for distribution. This could also be produced in an AGOL story-map format to display several different map views.

A **Situation Report Map** provides a simple, at-a-glance overview of known incident-related information.

Usually small-scale and not very detailed, these are useful in reporting the status of the incident to interested parties who may not be directly involved in the incident response such as elected officials or affected institutions. A situation report may contain one or many incidents. For example, the Utah Division of Emergency Management may produce a situation report with updates on multiple incidents across the state. Usually these will include one map per significant incident as well as one statewide map showing the location of all reported incidents across the state.

A **Damage Assessment Map** shows structures or other features physically damaged by an incident. The DA map is generally done in two phases. Phase one is a quick process using generalized information referred to as the “rapid assessment” or “windshield survey”. These are important to get done quickly because the map and the data it provides are necessary for disaster declaration documents. The amount and severity of damage is provided to elected officials, who will include this in emergency declarations and requests for federal assistance. Assessor data or property value information is particularly useful for determining monetary values of damaged areas.

The second phase of the DA map is a more detailed accounting of damage. Trained individuals will inspect the damaged area and fill out a specific detailed assessment form. When the results are returned, UMETT members may assist in consolidating the collected data to produce a map. If appropriate resources are available, this process could be greatly enhanced if the GIS team can provide those in the field with a web-service-based method of collecting this information. DA data can then be sent to the EOC in near-real-time and displayed on an interactive web-based map. There are other maps associated with damage assessment that are not done for all incidents such as qualifications for small business loans, housing assistance, or emergency public works repairs, so be prepared for ad hoc maps associated with this topic.

An **Impact Analysis Map** seeks to go beyond incident status to show known or predicted ways the incident is affecting people and infrastructure. Examples might include determining the known population within one mile of open shelters or point of distribution (PODS) or in a power outage area, producing HAZUS reports or other specialized damage estimates, or regarding casualties or number of structures in heavily impacted areas.

A **Critical Infrastructure Map** shows known impacts to and status of critical infrastructure. This can be a single map or a series if there are more types of critical facility impacts than can be clearly displayed on one map. These can include water/wastewater facilities, electrical facilities, oil and gas facilities, schools, hospitals, and other emergency response facilities.

A **Transportation Status Map** shows known impacts to and status of transportation infrastructure. It should provide an overview of the transportation network to support safe response and transportation, such as open routes to access an incident, as well as known obstructions, barriers or other restrictions.

An **Air Operations Map** shows features in and around the incident impact area relevant to air operations. For example, a wildfire involving aerial fire fighting tactics might show airports or helipads and their status, any flight restriction areas, aviation hazards (towers), water features, and other key features on an incident.

A **Land Ownership Map** shows the land ownership in and around the incident impact area. These may be

particularly useful outside urban areas where more land is publicly owned.

A **Public Information Map** provides incident-related information to be shared with the public via media, public meetings, etc. This may include shelter locations, evacuation areas and routes, points of distribution, road closures and so on. It only includes information shareable with the public, so it should not include status of critical facilities or other building damages or other personal or sensitive information.

An **Incident Progression Map** graphically displays the areas affected by the incident over time, such as graduated colors showing progression of a wildfire over the landscape each day of the incident.

A **Facilities Map** shows the layout of incident facilities such as an EOC, Incident Command Post, or Incident Base camp which will be included in the Incident Action Plan.

Typically the first maps produced during an incident will be general reference maps. These may include basic information such as jurisdictional boundaries, critical facilities and infrastructure, and aerial photographs. These are needed to start getting resources into the area and deciding where to stage them. Then the mapping work will shift towards incident tracking. As actions are planned and executed, the maps will be changed to reflect the progresses made in the incident. Periodically thematic maps may be made to show a specific topic of feature of the incident. Where available, web mapping may be used for any of these map products.

Members should also export a PDF snapshot of each map when it is created or updated. By using the standard naming conventions described in chapter 3 the files will automatically be stored in chronologic order.

### **WebEOC**

WebEOC is a web-enabled incident management system used by many jurisdictions in Utah to track information during an emergency. Although we do not anticipate many GIS users have experience using WebEOC at this point, it is good to be aware of this tool that emergency managers may use to share information. Also be aware that there is a mapping component under development that may be a useful resource in the future.

### **Symbology**

UMETT encourages use of the [NAPSG incident symbology](#)

### **United States National Grid**

Grid systems can be very useful in various response or search and rescue operations. UMETT recommends the use of the USNG for these types of operations. <https://www.fgdc.gov/usng>

### **Cartographic elements**

All map products should include standard cartographic elements including:

- Scale
- Title
- Author
- North Arrow
- Date

- Time
- Legend
- Data sources
- Logos (where applicable)

UMETT members are expected to review products prior to distribution to ensure data are current, features are in the correct location, map scale is accurate, map is complete and readable and communicates the intended message clearly.

**Map Request Form**

Map request forms can be extremely helpful in keeping track of map requests. They help ensure adequate information is collected about what information needs to be included on maps, who requested it, and other details. UMETT will develop a sample form that can be used in the event that the local jurisdiction does not have one in use already.

# Chapter 5 - Membership

## **Purpose:**

Develop training requirements and procedures.

## **Specifications:**

Some required training will be in-person and some will be online, including ICS training from the FEMA website.

## **Procedures:**

### *Becoming a UMETT Responder*

As a committee of the Utah Geographic Information Council, UMETT quarterly meetings are open to all who are interested in GIS, emergency response and emergency management. Those interested in getting notifications of upcoming meetings or GIS news of interest to emergency management can contact any member of the UMETT Coordinating Board to get added to the list.

The UMETT Coordinating Board expects that all UMETT Responders practice GIS in a professional capacity, whether private sector, public sector or non-profit. Since UMETT is offering response capabilities to local emergency managers as a resource, we expect that those practicing GIS on a daily basis will be best suited to provide the level of service a local emergency manager needs.

The requirements to become a UMETT responder are:

1. Take basic FEMA Incident Command System training
2. Get added to the UMETT e-mail distribution list
3. Attend UMETT meetings and receive UMETT-specific response training
4. Provide documentation of professional GIS employment

### *Take Basic FEMA Incident Command System Training*

FEMA offers a number of excellent emergency management training courses for free on their website. These specific courses will give you a background on the Incident Command System (ICS) that establishes the command and control structure during an incident. The FEMA training also includes two specialty courses that deal with GIS. These give a good overview of how GIS is used in the Emergency management world.

The required FEMA courses are:

**IS-100.b:** Introduction to Incident Command System

<https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-100.b>

**IS-200.b:** ICS for Single Resources and Initial Action Incidents

<https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-200.b>

**IS-700.a:** National Incident Management System (NIMS) – An Introduction

<https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-700.a>

**IS-800.b:** National Response Framework – An Introduction

<https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-800.b>

These courses from FEMA are not required, but are recommended:

**IS-103:** GIS Specialist

<http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-103>

**IS-922:** Applications of GIS for Emergency Management

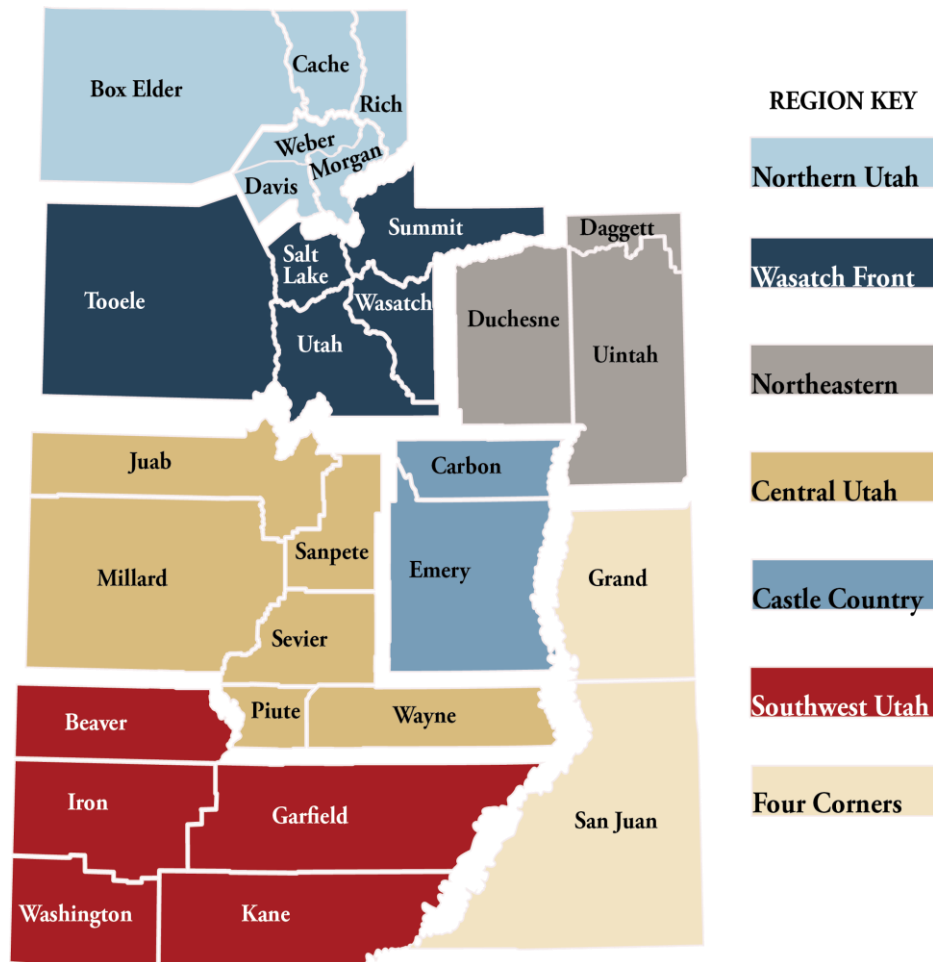
<http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=is-922>

### *Response Levels*

UMETT Responders will indicate to the UMETT Coordinating Board via e-mail the extent of their response capabilities.

- Level I (able to respond to any incidents within the state)
- Level II (able to respond locally within their home region, as defined below)
- Level III (able to respond only within their local jurisdiction or county)
- Level IV (able to lend assistance remotely but not respond onsite)

UMETT defines regions of the state to match those used by the Utah Division of Emergency Management:



### *UMETT Mailing List*

All UMETT Responders must be on the UMETT e-mail distribution list, [umett@googlegroups.com](mailto:umett@googlegroups.com). Each responder will be added to this distribution list by a member of the UMETT Coordinating Board. This distribution list will include both responders and non-responders. While some UMETT members may see e-mail that is not relevant to them, it will be beneficial for all UMETT members to be made aware of potential UMETT incident responses.

### *Documentation Needed for Becoming a UMETT Responder*

Each UMETT Responder must be practicing GIS in a professional capacity, whether in the private, public or non-profit sector. UMETT Responders need to submit copies of their course completion certificates from the courses listed above to the UMETT Coordinating Board. Upon receipt of these certificates, the Coordinating Board will send prospective responders a form letter that they must fill out, which includes a place for their supervisor to verify that the responder is practicing GIS in his or her organization and that he or she is authorized to participate in a UMETT response.

*Maintaining Membership → UMETT Meeting Attendance and Exercise Participation*

As a committee, UMETT holds meetings every quarter. One of these meetings includes a 90-minute exercise at the Utah Geographic Information Council annual conference. To maintain membership as a UMETT Responder, each responder must attend at least one quarterly meeting per year. All UMETT meetings (except the one at the UGIC Conference) have a web-based component, so members can attend meetings remotely.

It is critical for UMETT Responders to regularly exercise their GIS abilities in an emergency response context. City, county and state emergency managers participate in one or more exercises each year, and we recommend that UMETT Responders contact the emergency manager for their jurisdiction to participate in these exercises. If a UMETT Responder is unable to participate in a local exercise, he or she can attend the UMETT exercise held at the UGIC Conference.