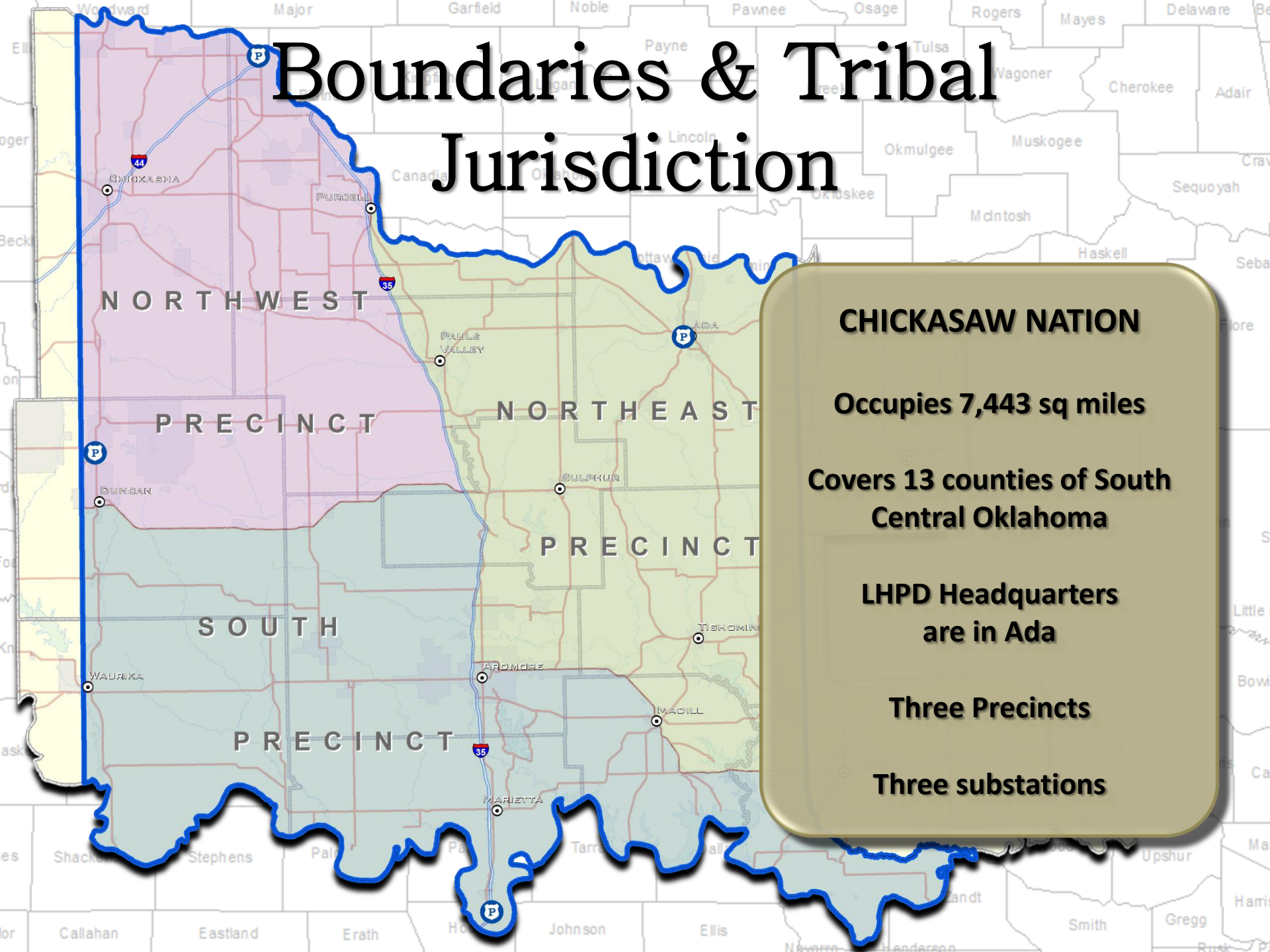
GSI
Goes Mobile!
Building the
LHPD Mobile App
the Chickasaw Nation
THE GREAT SEAL OF THE CHICKASAW NATION
15TH ANNIVERSARY
1997
OKSCAUG
2012
GIS: SERVE-TO-PROTECT

Boundaries & Tribal Jurisdiction



CHICKASAW NATION

Occupies 7,443 sq miles

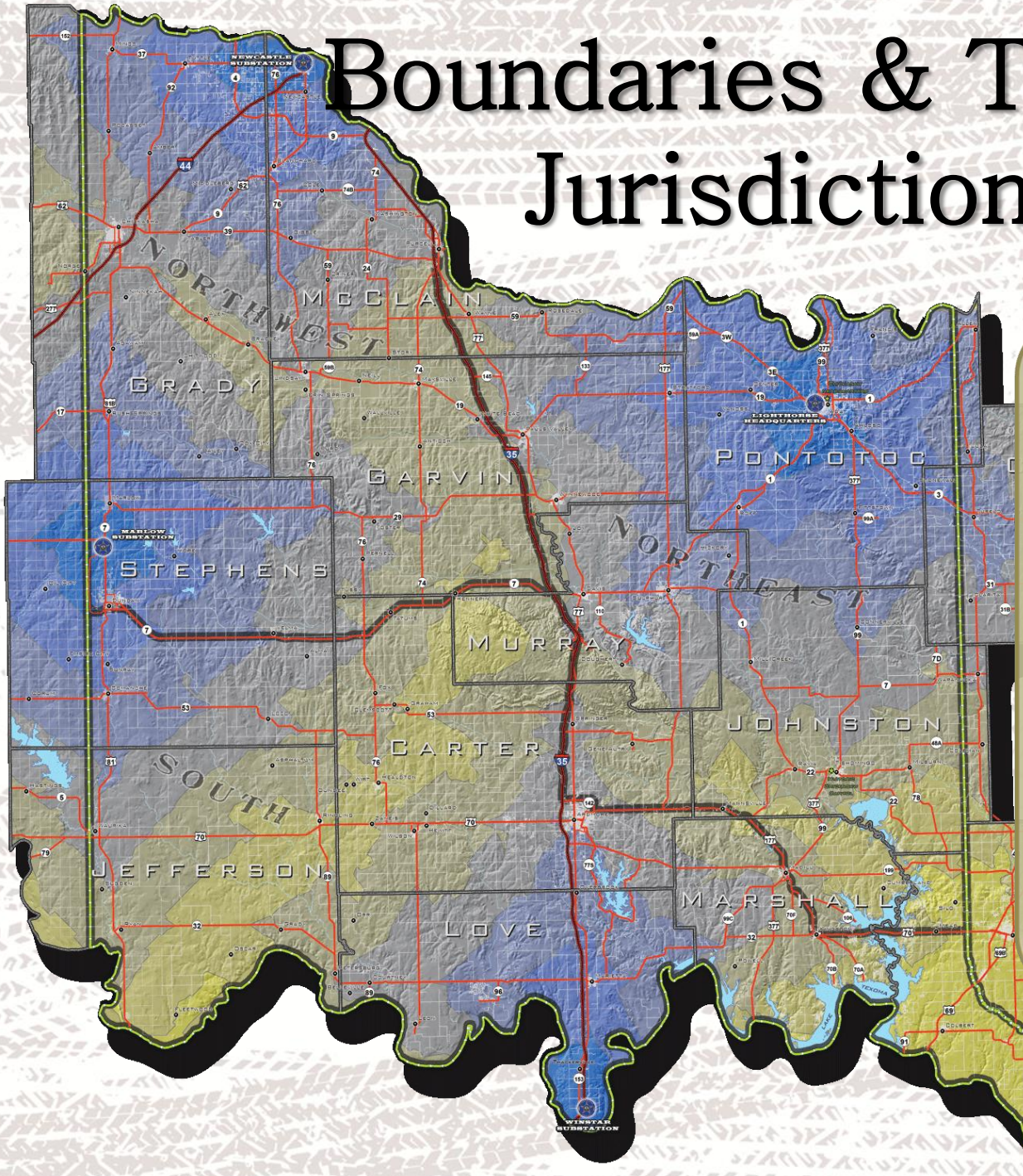
Covers 13 counties of South Central Oklahoma

LHPD Headquarters are in Ada

Three Precincts

Three substations

Boundaries & Tribal Jurisdiction



THE ISSUES

Tribal Jurisdiction

Cross Jurisdictions

6 to 8 Officers per shift

Timing can be critical during emergencies

Response time

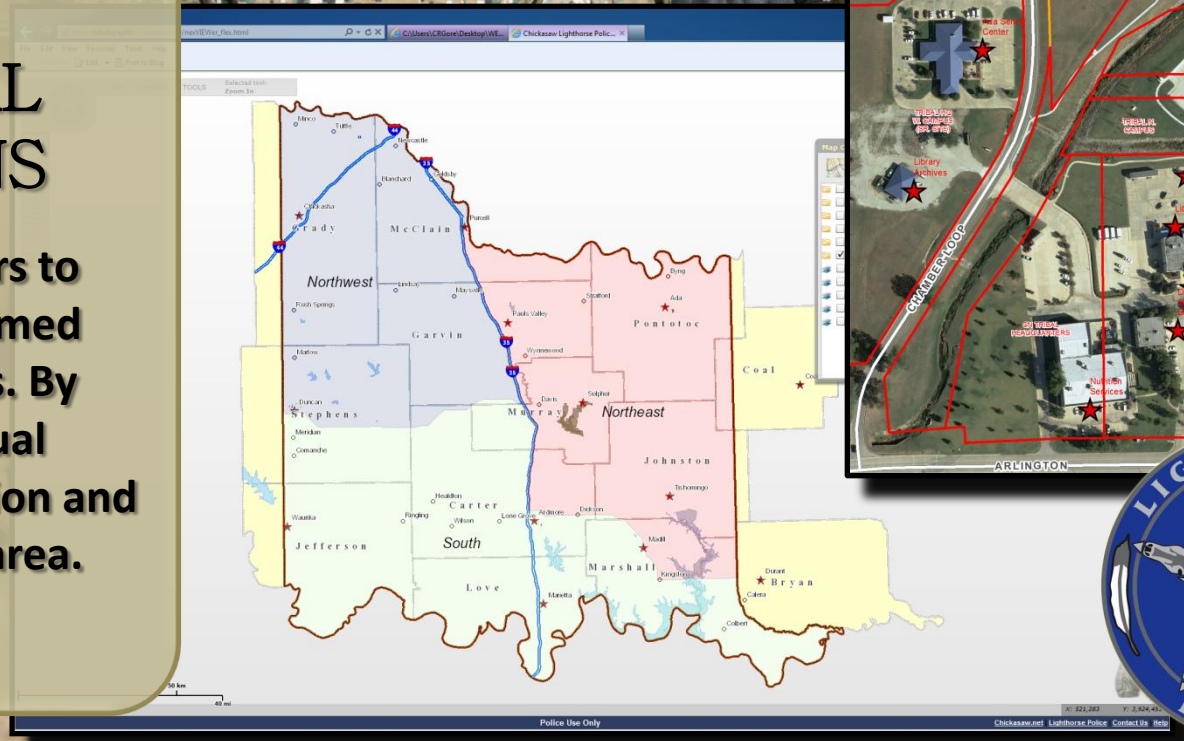
Benefits of GIS in Law Enforcement

The GSI web application provides a quick, and easy, way for tribal police to determine

- **~Tribal boundaries & jurisdiction**
- **~View tribally owned & allotted lands**
- **~Facilities with floor plans & pictures**
- **~Area Emergency Management**
- **~Services (police, sheriff & fire stations, and hospitals)**
- **~High resolution ortho & oblique imagery**

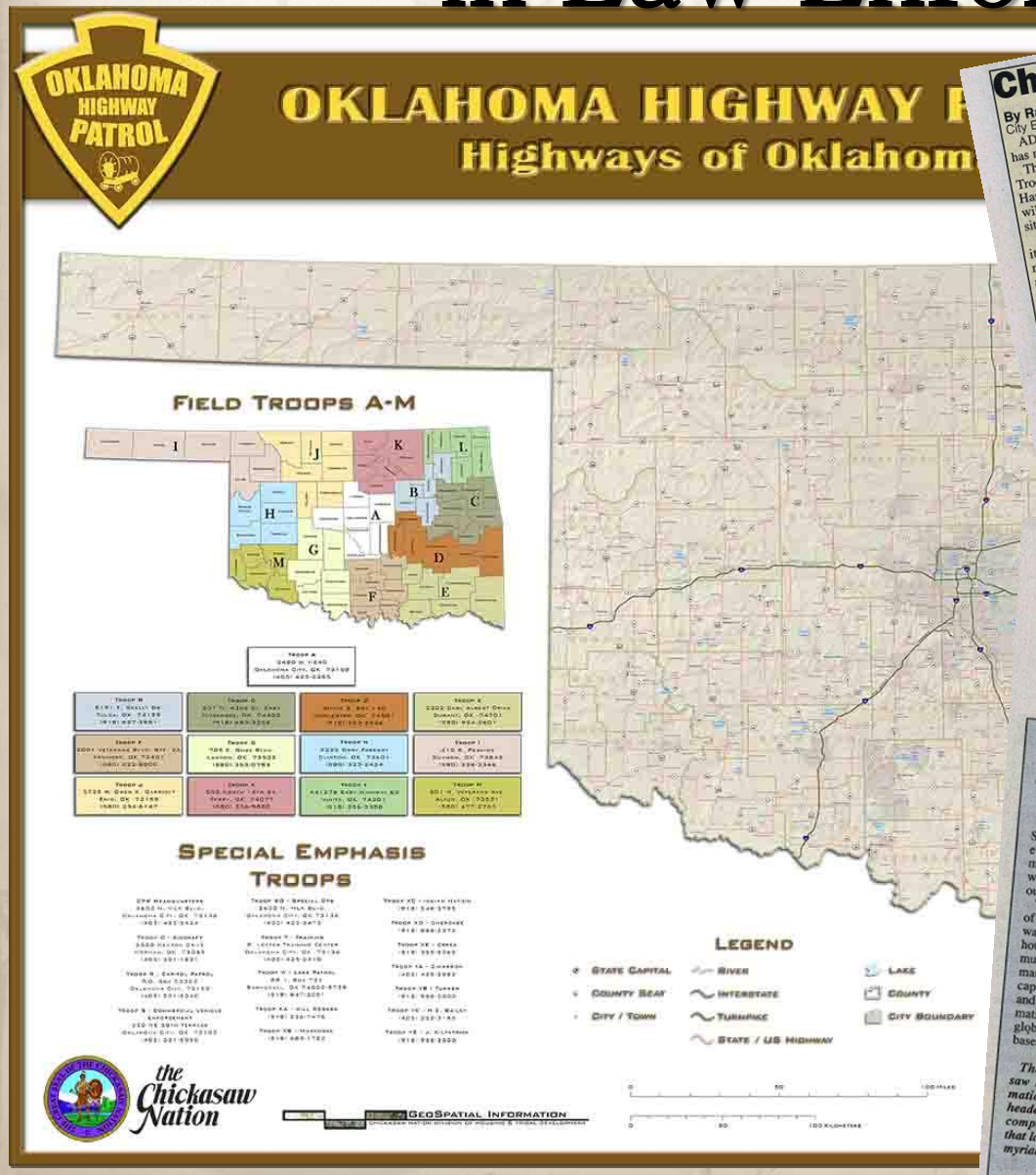
TACTICAL DECISIONS

GIS allows officers to make more informed tactical decisions. By providing a visual depiction of a location and it's surrounding area.



LIGHTHORSE POLICE

Benefits of GIS in Law Enforcement



Chickasaws provide maps to aid state troopers

By Randy Mitchell
City Editor

ADA — The Oklahoma Highway Patrol Troop F has new maps courtesy of the Chickasaw Nation.

The maps were created after a request by OHP Troop F Captain Ronnie Hampton. He said it will help in emergency situations.

"By doing this, I know it will increase our response times when a trooper travels from one county to another," Hampton said. "It's going to increase our ability to plan when tornadoes, wildfires and things like that hit, and most importantly, when a trooper gets in a car chase that are on county roads, it will increase our dispatchers' ability to look at the map and tell where there is a T-intersection or a road dead-ends so we can tell a trooper so he doesn't get into a car crash."

Smaller maps will be given to troopers in the field while the large maps will be placed at Troop F headquarters in Ardmore for dispatchers. Hampton said although laminated, the troop will cover the larger maps with Plexiglas so they can be written on during emergencies.

Corey Gillum, GIS technician with the Chickasaw Nation and creator of the maps, said it took some time to create the maps, but it wasn't too hard.

"We have a big database with all this information in it," he said. "We went through it and got the proper road names and got them all labeled."

John Ellis, GIS director, said the Chickasaw Nation already had the information concerning roads in the area.

"What made it easy to create this map is Troop F has seven counties that are located in our service area, so with all the data already collected," he said. "We really only have to go look at one thing because we have this data before the Chickasaw Nation. Hampton said they are a real boon to Troop F.

"On behalf of Highway Patrol Troop F in Ardmore, and the seven counties that Troop F serves, I would like to state the great Anoatubby and the Chickasaw Nation people to work with on this project," Hampton said. "Obviously, it took a bit of time and a lot of people have been

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Chickasaw Nation goes high-tech to make connections

By Tony Choate
Chickasaw Nation

Finding our way to a new location using GPS, or the Global Positioning System, has become such an everyday occurrence that we may sometimes wonder how we ever found our way without it.

While many of us don't think of GPS as much more than a way to find a new restaurant or hotel, GPS is only one part of a much larger Geographic Information System (GIS) which captures, manages, analyzes and displays geographic information in the form of maps, globes, reports, charts, databases and websites.

The award-winning Chickasaw Nation Geospatial Information (GSI) department headed by director John Ellis, compiles information from that larger system to provide a myriad of useful services.

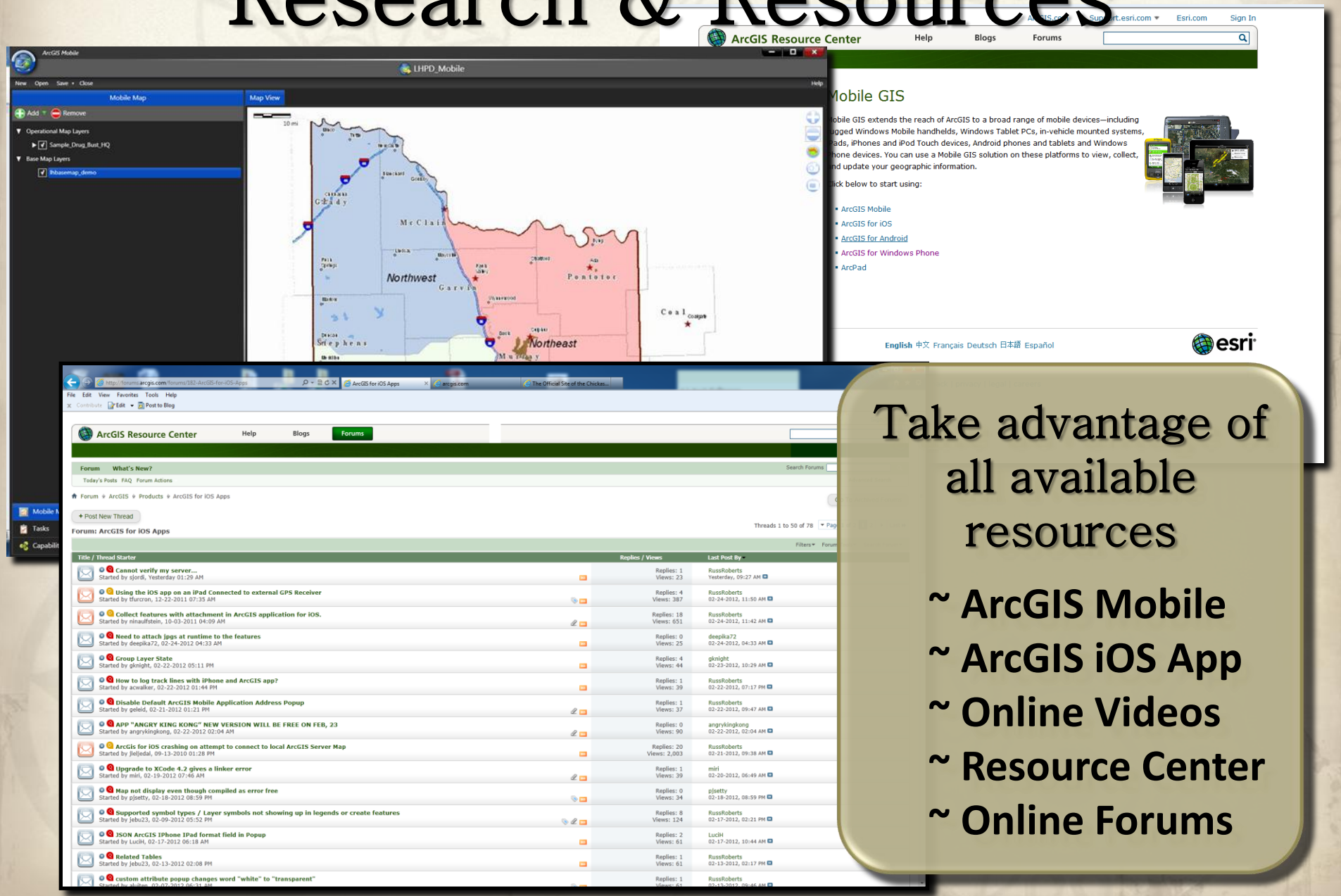
"The Geospatial team provides information and services which help improve the efficiency and effectiveness of our emergency services and enhances the effectiveness of our economic development efforts," said Gov. Bill Anoatubby. "They also develop maps and other information which help us offer more effective social services and better preserve our history and heritage."

Four case studies involving work by the Chickasaw Nation GSI department will be published in the upcoming book, *Tribal GIS: Supporting Tribal Decision Making*. These case studies involve developing more efficient road networks, cultural preservation efforts and enhancing emergency services.

Ellis said that they are con-

The Process of Making it all Mobile

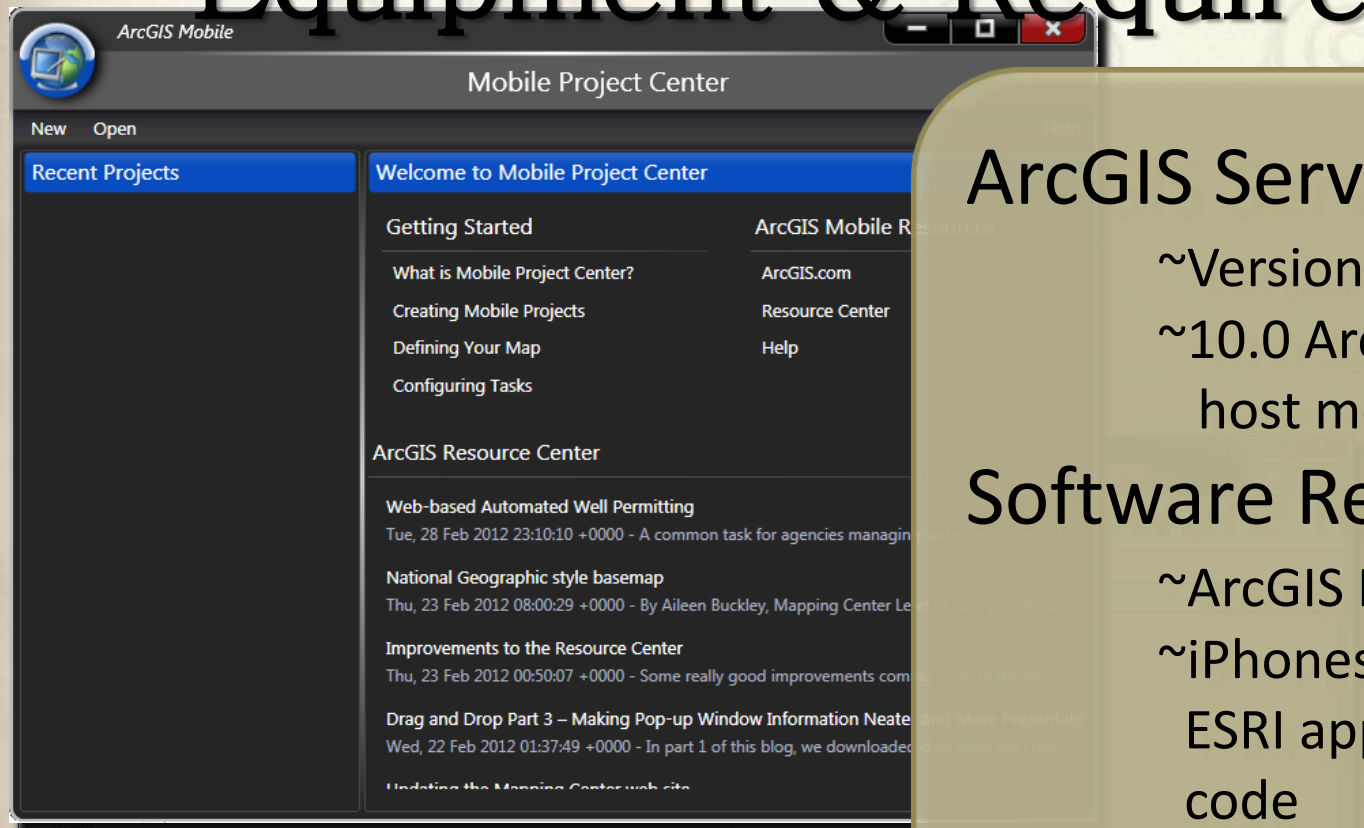
Research & Resources

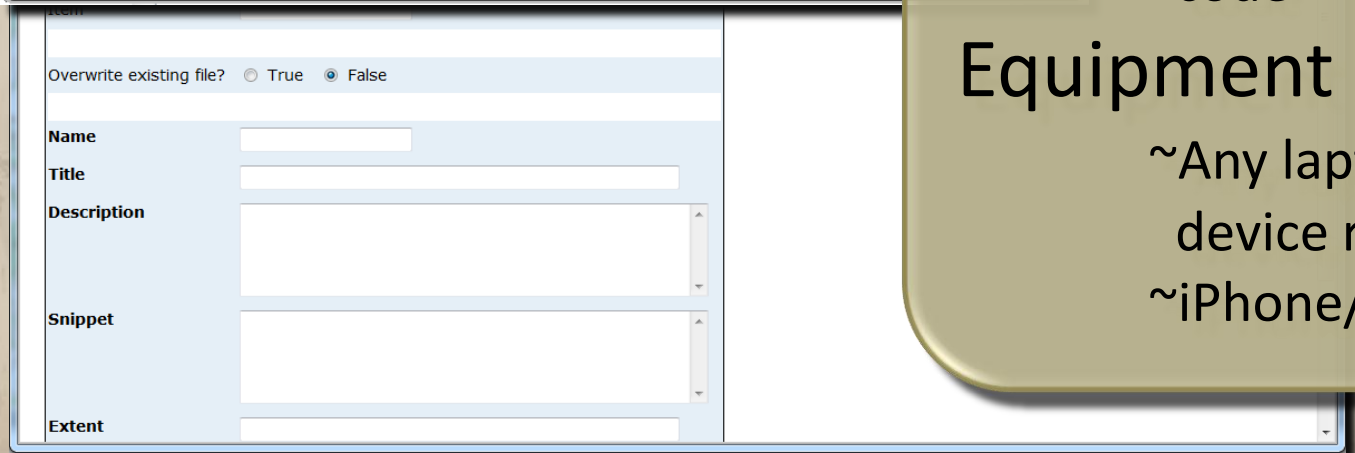


Take advantage of all available resources

- ~ ArcGIS Mobile
- ~ ArcGIS iOS App
- ~ Online Videos
- ~ Resource Center
- ~ Online Forums

Equipment & Requirements





ArcGIS Server 10.0

~Version 9.x map services

~10.0 ArcGIS Server to host mobile maps.

Software Requirements

~ArcGIS Mobile 10

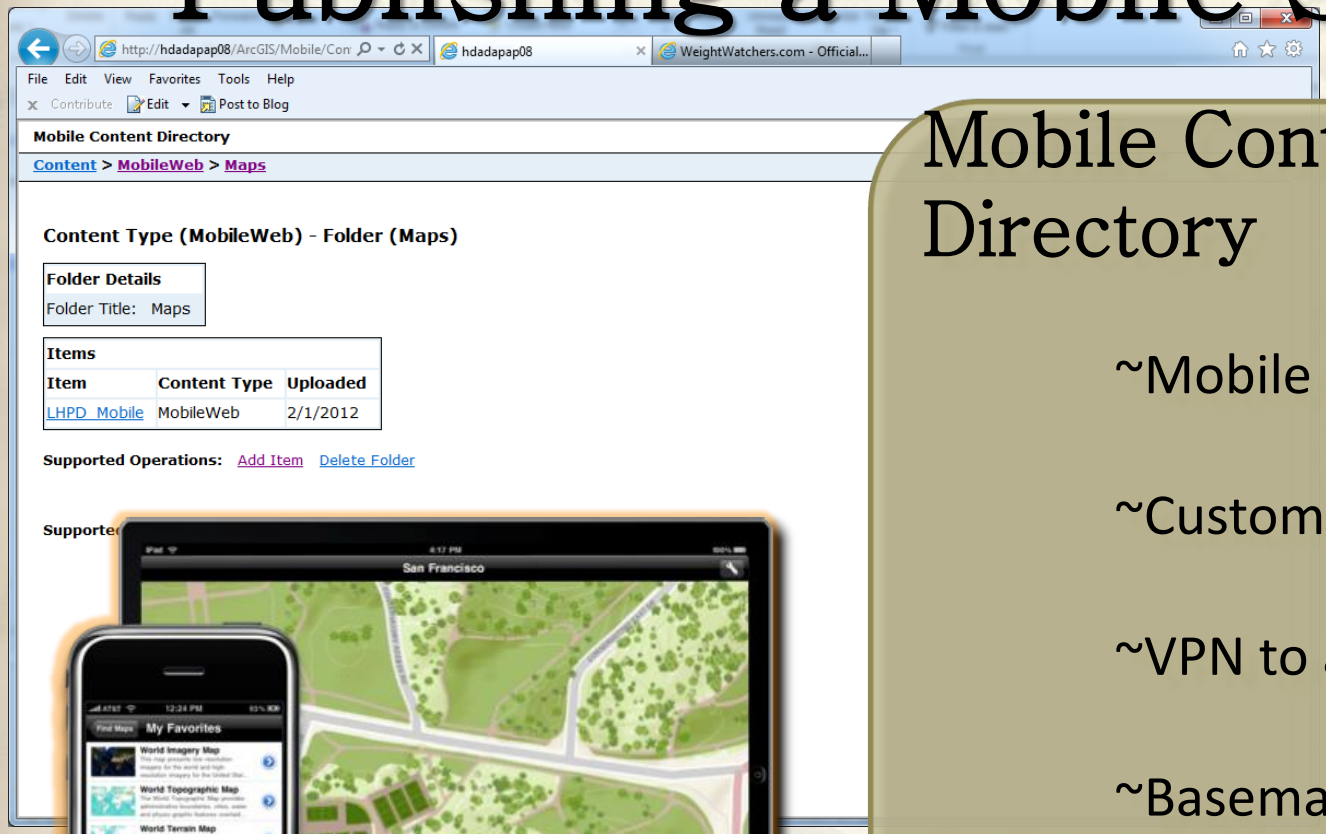
~iPhones/iPads requires ESRI app or the ESRI iOS code

Equipment Required

~Any laptop or handheld device running Windows.

~iPhone/iPad

Publishing a Mobile Service



Mobile Content Directory

~Mobile content server

~Custom maps/services

~VPN to a private server

~Basemap services

~Feature services

~Edit features

~Collect data

Publishing a Mobile Service

Mobile Content Directory

Private services can be accessed by leveraging the VPN capabilities of a smartphone device.

To accomplish this your customized MXD must be published to the ArcGIS Server as a mobile service. Once the service is published, it is listed in the Mobile Content Directory of Content Server in the ‘Maps’ folder.

Understanding JSON


```
{
 "operationalLayers": [{
                "url": "http://hdadapap08/ArcGIS/rest/services/LHPD/LHPD_Holdings/MapServer",
                "id": 0,
                "visibility": true,
                "visibleLayers": [
                                0,
                                1,
                                3
                                ],
                "opacity": 1,
                "title": "Mobile_Holdings",
                "layers": [
                {
                "id": 1,
                "popupInfo": {
                                "title": "Chickasaw Nation Facilities",
                                "fieldInfos": [
                                {
                                "fieldName": "Fac_Name",
                                "label": "Facility",
                                "isEditable": false,
                                "tooltip": "",
                                "visible": true,
                                "stringFieldOption": "textbox"
                                },
                                {
                                "fieldName": "Address",
                                "label": "Address",
```


Map Format

JSON (JavaScript Object Notation) is a lightweight text-based code derived from JavaScript.

Before the map is added to the mobile content server, it must be composed.

Basically composing a map means telling the server which layers are operational layers and the basemap layer using JSON.

JSON is the code used by the mobile content server to format the contents of a map.

Understanding JSON


```
{
 "operationalLayers": [{
            "url": "http://hdadapap08/ArcGIS/rest/services/LHPD/LHPD_Holdings/MapServer",
            "id": 0,
            "visibility": true,
            "visibleLayers": [
                        0,
                        1,
                        3
                        ],
            "opacity": 1,
            "title": "Mobile_Holdings",
            "layers": [
            {
            "id": 1,
            "popupInfo": {
                        "title": "Chickasaw Nation Facilities",
                        "fieldInfos": [
                        {
                        "fieldName": "Fac_Name",
                        "label": "Facility",
                        "isEditable": false,
                        "tooltip": "",
                        "visible": true,
                        "stringFieldOption": "textbox"
                        },
                        {
                        "fieldName": "Address",
                        "label": "Address",
```


Map Format

For each layer type, certain information is required.

~URL-this is the URL to the service

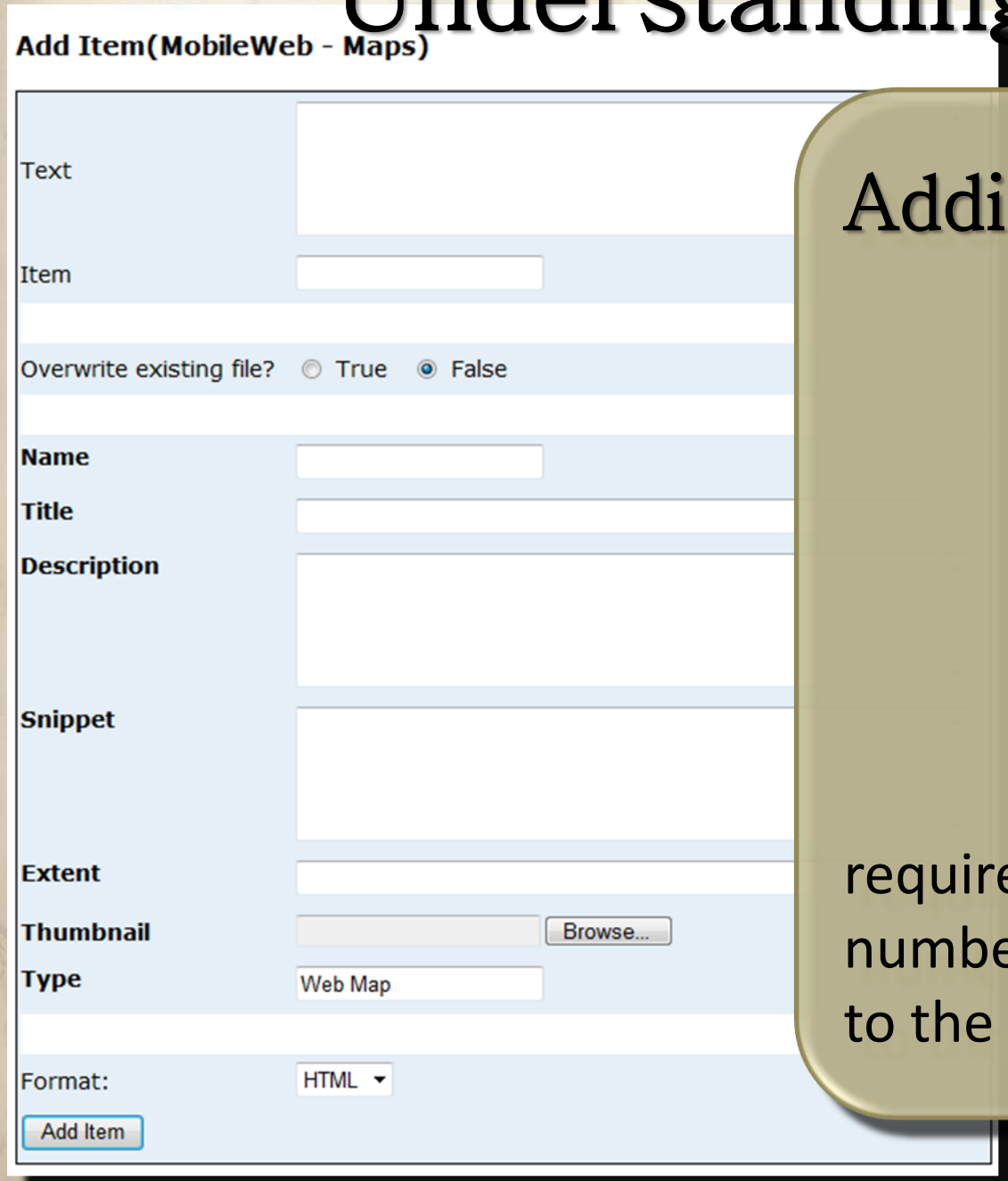
~Visibility – whether or not the layer is visible

~Opacity – a number that defines the transparency

~Title – the title used in the legend

Attribute information is coded here as well.

Understanding JSON



Adding Your Map

~ Validate the JSON

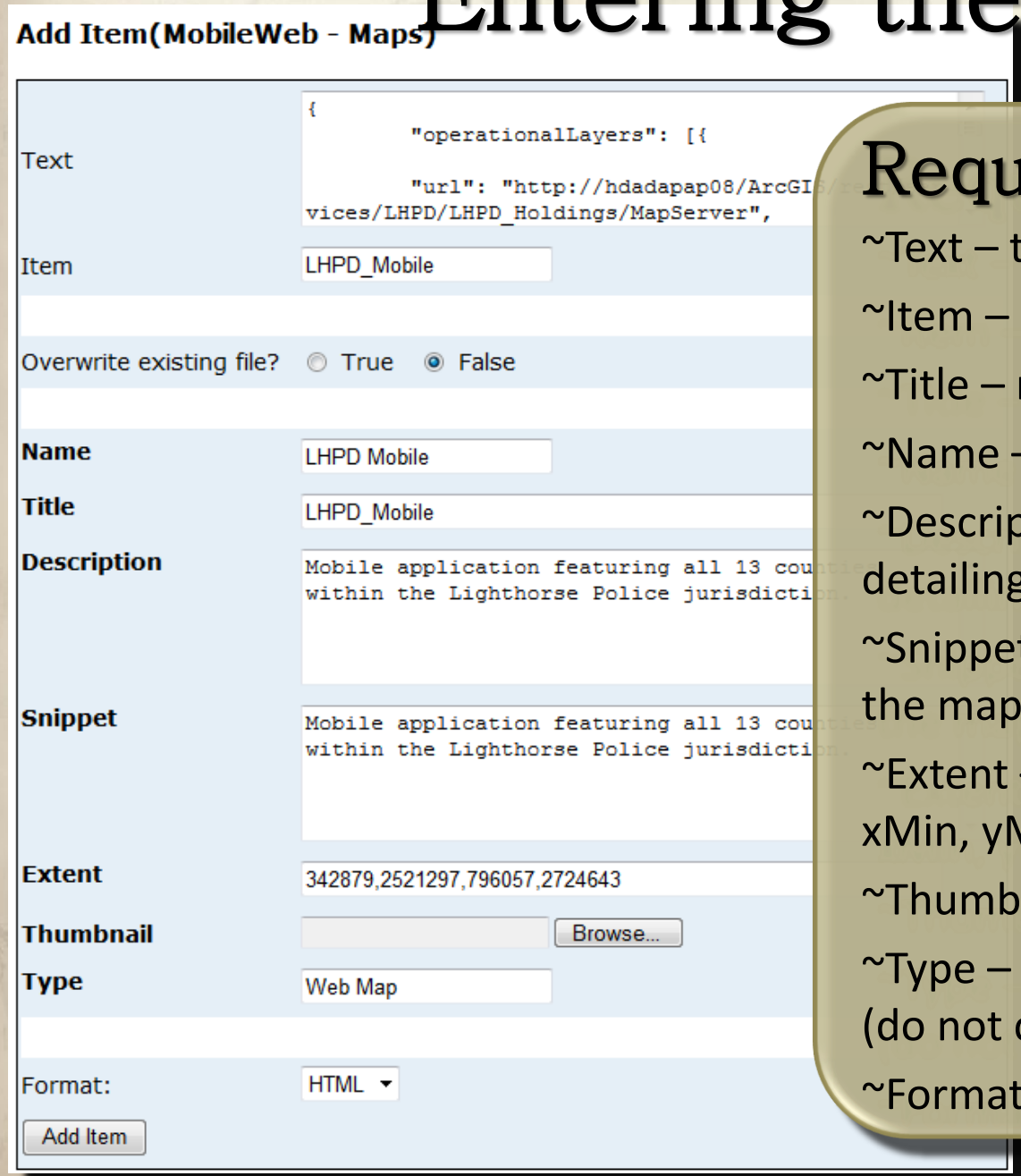
~ Online validator

~ Upload the service to the mobile content server

~ click 'Add Item'

The 'Add Item' page requires that you enter a number of details in addition to the formatted JSON code.

Entering the Map



Required Details

~Text – this is the JSON code

~Item – map identifier

~Title – map name

~Name – user-friendly map name

~Description – long description detailing metadata

~Snippet – short description about the map

~Extent – bounding coordinates in xMin, yMin, xMax, yMax using GCS

~Thumbnail – optional map image

~Type – default to ‘Web Map’ (do not change)

~Format – leave this as HTML

Connecting to the Server

ArcGIS iPhone App

Open the ArcGIS application on the smartphone and navigate to ‘ArcGIS Servers’ and create a new connection.

Enter the URL of the content server. The address should include: ‘host/instance/mobile’

All mobile services added to the Maps folder are will be listed!

Mobile GIS!

Benefits of Mobile GIS

Having real-time GIS provides Lighthorse officers with immediate access to:

~Tribal Boundaries ~Facilities ~Attributes ~GPS Location

Additional Information

In the Making

Work is currently underway to further enhance the GSI mobile application.

We are working on incorporation a field crew view to the current application.

This capability would allow officers to see each others field location and improve response times in emergency situations.

Although this will require some editing of the application code, the completed product will be a very useful resource.

the Chickasaw Nation

Any Questions?

GeoSpatial Information

Chickasaw Nation Division of Housing & Tribal Development

Acknowledgments

SPECIAL THANKS TO:

~ JOHN ELLIS, DIRECTOR
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~ WAYNE SCRIBNER, ADMINISTRATOR
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THE CHICKASAW NATION