

Renewable Energy Development



CURRENT PERMITTING

DEPARTMENT INVOLVEMENT/TOOLS

LOSS OF RECREATIONAL OPPORTUNITIES

Various Levels of Permitting...



- **City Permitting**
- **County Permitting**
- **State Permitting**
- **Federal Permitting**

City Permitting



- **Private land - within the city: will require the City Council to permit and possibly rezone the area.**
 - For example, the 30MW solar photovoltaic facility on private land (~330 acres) within a municipality.
 - ✦ We would encourage the incorporation of Department review and/or Department developed guidelines into their process.

County Permitting



- **Private lands outside of a municipality, the county has jurisdiction.**
 - Permitting requirements are based on each county's ordinances which are not the same across the state.
 - ✦ i.e. Navajo County requires a letter from the Department and encourages developers to use the Department's wind guidelines while other counties do not.
- **The Department is currently developing relationships with counties to ensure we are notified of projects prior to the hearing to ensure our input is being considered.**
 - We are also trying to get other counties to incorporate language similar to Navajo County's wind ordinances.

State Permitting



- **Arizona State Land Department (ASLD)**
 - If it is on State Trust Land, a permit must be obtained to place any improvements from the AZ State Land Department.
 - ✦ AGFD has the opportunity to review all ASLD applications for permits.
- **Arizona Department of Water Resources**
 - Required only when there is a water component typically involving a well.
 - ✦ AGFD does not have an opportunity to review.
- **Arizona Department of Environmental Quality**
 - Required when the project is solar thermal.
 - ✦ AGFD does not have an opportunity to review.

State Permitting (cont.)



AZ Corporation Commission (ACC)

- Has jurisdiction on all state, county, or incorporated lands where:
 - Proposed plants generating 100 megawatts or more of thermal electric, nuclear, or hydroelectric power (except PV & wind); or
 - Proposed above-ground transmission lines designed for 115kv or higher.
- Provides the final approval in a public proceeding for any Certificates of Environmental Compatibility (CEC) which have been granted by the Arizona Power Plant and Line Siting Committee (APPLSC). The ACC may accept, reject, or modify the APPLSC's recommendations.

Federal Permitting



- **On federal land or ties into a federal line, currently requires NEPA review.**
 - Western Area Power Administration (WAPA) – Federal transmission lines
 - Bureau of Land Management (BLM) – where most renewable energy projects are being developed on public lands
 - ✦ The Department actively participates in the development of as many NEPA analyses as possible.

- **BLM has developed two separate analyses:**
 - Programmatic Environmental Impact Statements
 - Restoration Design Energy Project.

Restoration Design Energy Project



- **The objectives of the RDEP include:**
 - Foster environmentally responsible production of renewable energy on federal, tribal, state, and private lands in Arizona
 - Designating BLM-administered public lands for renewable energy development with an emphasis on previously disturbed sites and areas with low resource conflicts;
 - Providing opportunities to sustainably reuse disturbed lands with renewable energy potential, recognizing the demand for renewable energy generation and potential remediation and restoration requirements; and
 - Amend BLM RMPs as appropriate.
- **The Department has provided wildlife data that has been used to help designate appropriate lands for development.**

Summary of Alternatives



Alternative	REDA All Lands	REDA Public Lands
Alternative 1: Maximum REDA	3,462,700 acres	448,700 acres
Alternative 2: Transmission Line & Utility Corridor	2,272,100 acres	339,200 acres
Alternative 3: Water Conservation & Protection	3,462,700 acres	448,700 acres
Alternative 4: Load Offset	1,716,800 acres	214,700 acres
Alternative 5: Land Tenure	72,900 acres	72,900 acres

Department Involvement (capacity)



- There are 6 regional leads and 1 statewide lead who actively engage:
 - Counties
 - The Arizona Corporation Commission
 - BLM
 - ✦ Becoming cooperating agencies on the development of EISs
 - ✦ Coordinating with the BLM Renewable Energy Coordination Office (RECO)
 - Renewable Energy Developers

Department Tools



- **Guidelines**
- **Arizona Online Environmental Review Tool**
- **Geospatial Planning Tool**
 - Species and Habitat Conservation Guide

Department Guidelines



- ***Guidelines for Solar Development in Arizona, March 12, 2010.***
 - Provide information to help reduce impacts to wildlife from solar energy development in Arizona. They include recommendations on:
 - 1) preliminary screening of proposed solar energy projects,
 - 2) developing avoidance and minimization measures,
 - 3) establishing appropriate mitigation, and
 - 4) research opportunities.

- ***Guidelines for Reducing Impacts to Wildlife from Wind Energy Development in Arizona, November 23, 2009.***
 - Provide information to help reduce impacts to bats and birds from wind energy development in Arizona. They include recommendations on:
 - 1) preliminary screening of proposed wind energy projects,
 - 2) pre-construction study design and methods,
 - 3) assessing direct, indirect, and cumulative impacts to bats and birds in accordance with state and federal laws,
 - 4) developing avoidance and minimization measures,
 - 5) establishing appropriate mitigation, and
 - 6) post-construction operations monitoring, analysis, and reporting methods.

Online Environmental Review Tool



- This tool was developed and intended for the purpose of screening projects for potential impacts on resources of special concern.

<http://www.azgfd.gov/hgis/>





Start Over Project Category: Development Outside Municipalities (Rural Development), Commercial/Industrial (mall) and associated infrastructure, New construction

1 Project Type

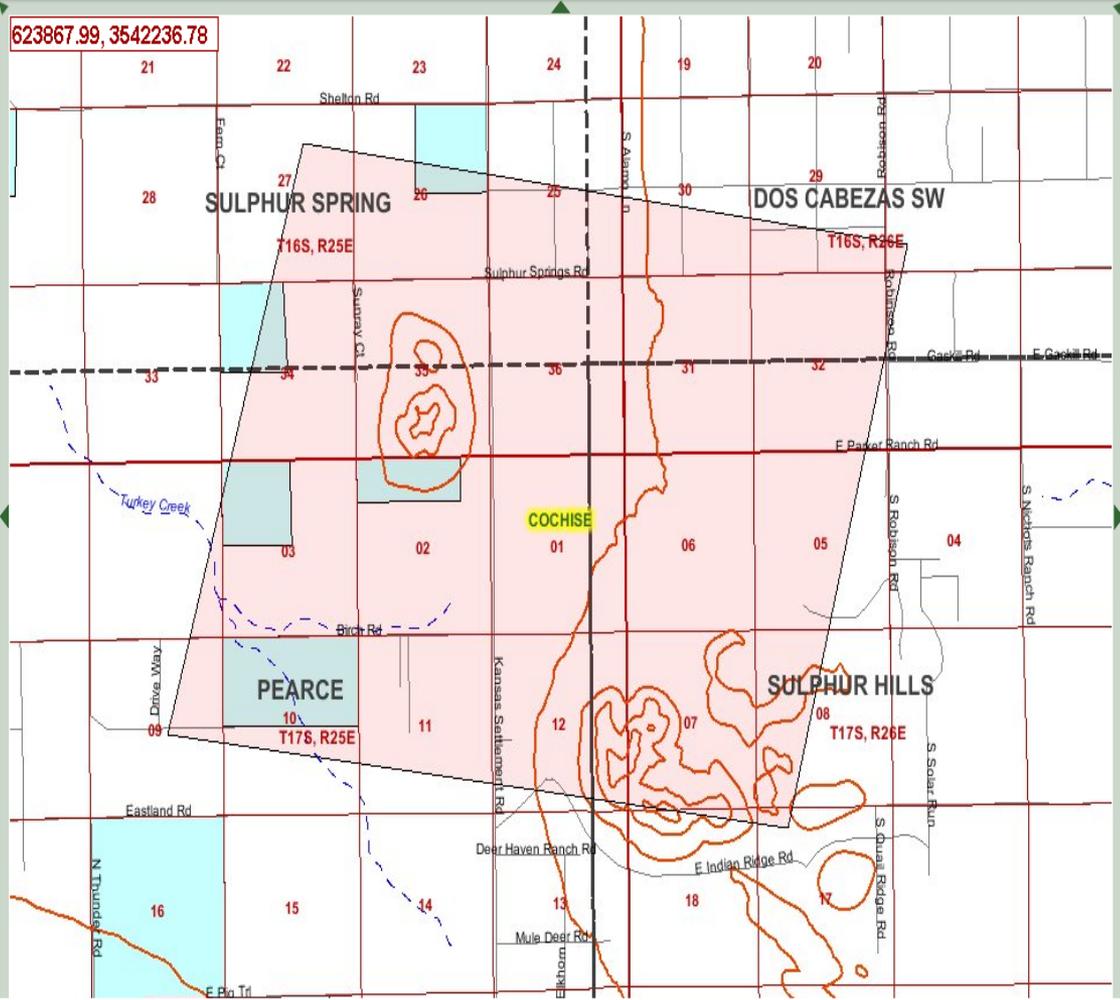
INSTRUCTIONS: DRAW PROJECT

- 1. Please select a tool to draw entire project area on map.
 - Draw a point ? Please be sure to double-click to complete a line or shape.
 - Draw a line ?
 - Draw a shape ?
- 2. Click on the **NEXT** button to begin submitting the project

2 Project Area

- Point
- Line
- Shape
- Clear Project

3 Project Placement



4 Project Summary

5 Project Results

Refresh Map

- Base Map
 - Own
 - BLM
 - Forest
 - Indian Res.
 - Local or State Parks
 - Military
 - Natl. Parks
 - Other
 - Private
 - State Trust
 - Wildlife
 - Reservations
 - Cities
 - Wilderness
 - Arizona County Boundary
 - Perennial Waters
 - Major Streams and Wash
 - Streams and Washes
 - Township Lines
 - USGS 7.5 feet Quadrang
 - Towns
 - AzPlaces
 - MileMarkers

The current scale is 1: 52256 345.65m 1134.28ft

Back

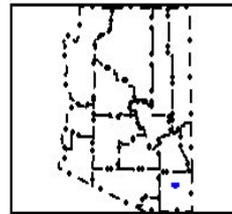
Next

My Projects

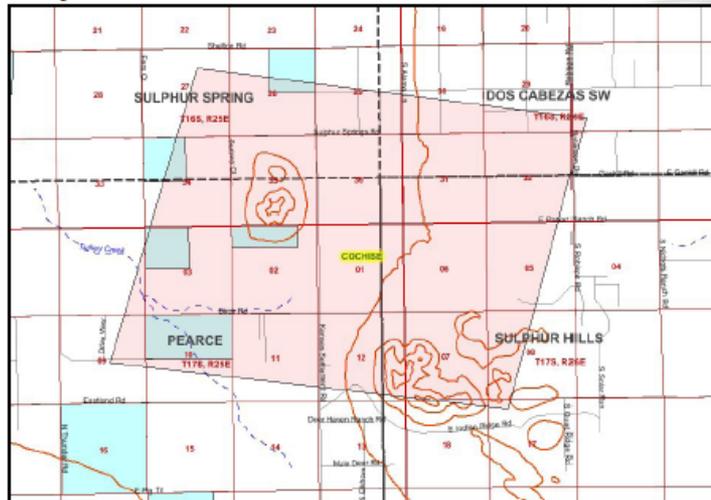
Update Profile

Logout

Close Window



Project Location



The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	SC		S	
<i>Buteo swainsoni</i>	Swainson's Hawk			S	

Project Name: WGA Demo Project

Submitted By: Sabra Schwartz

On behalf of: AZGFD

Project Search ID: 20100108011170

Date: 1/8/2010 3:16:37 PM

Project Category: Development Outside Municipalities (Rural Development), Commercial/industrial (mall) and associated infrastructure, New construction

Project Coordinates (UTM Zone 12-NAD 83): 617501.705, 3539991.472 meter

Project Area: 9890.735 acres

Project Perimeter: 25739.476 meter

County: COCHISE

USGS 7.5 Minute Quadrangle ID: 1787

Quadrangle Name: SULPHUR SPRING

Project locality is currently being scoped

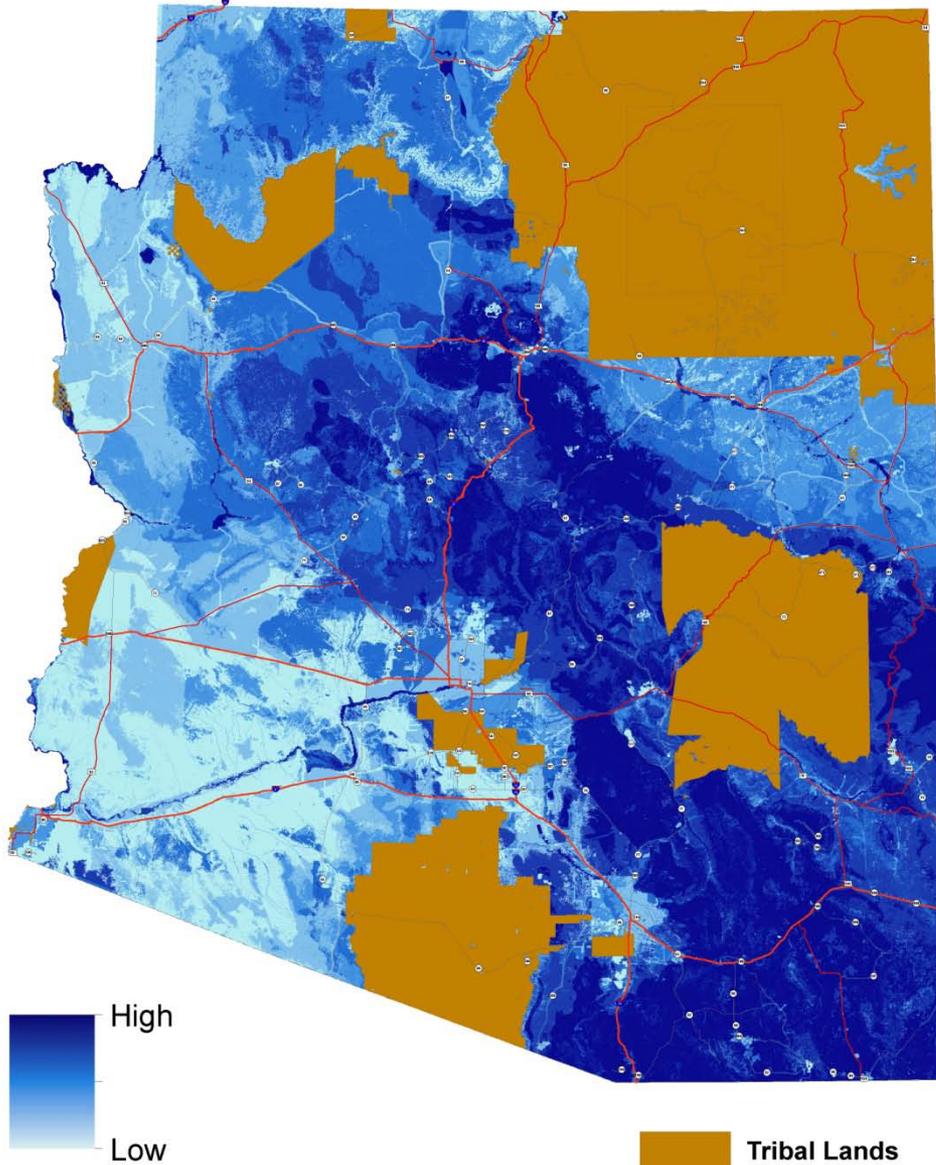
Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

Geospatial Planning Tool

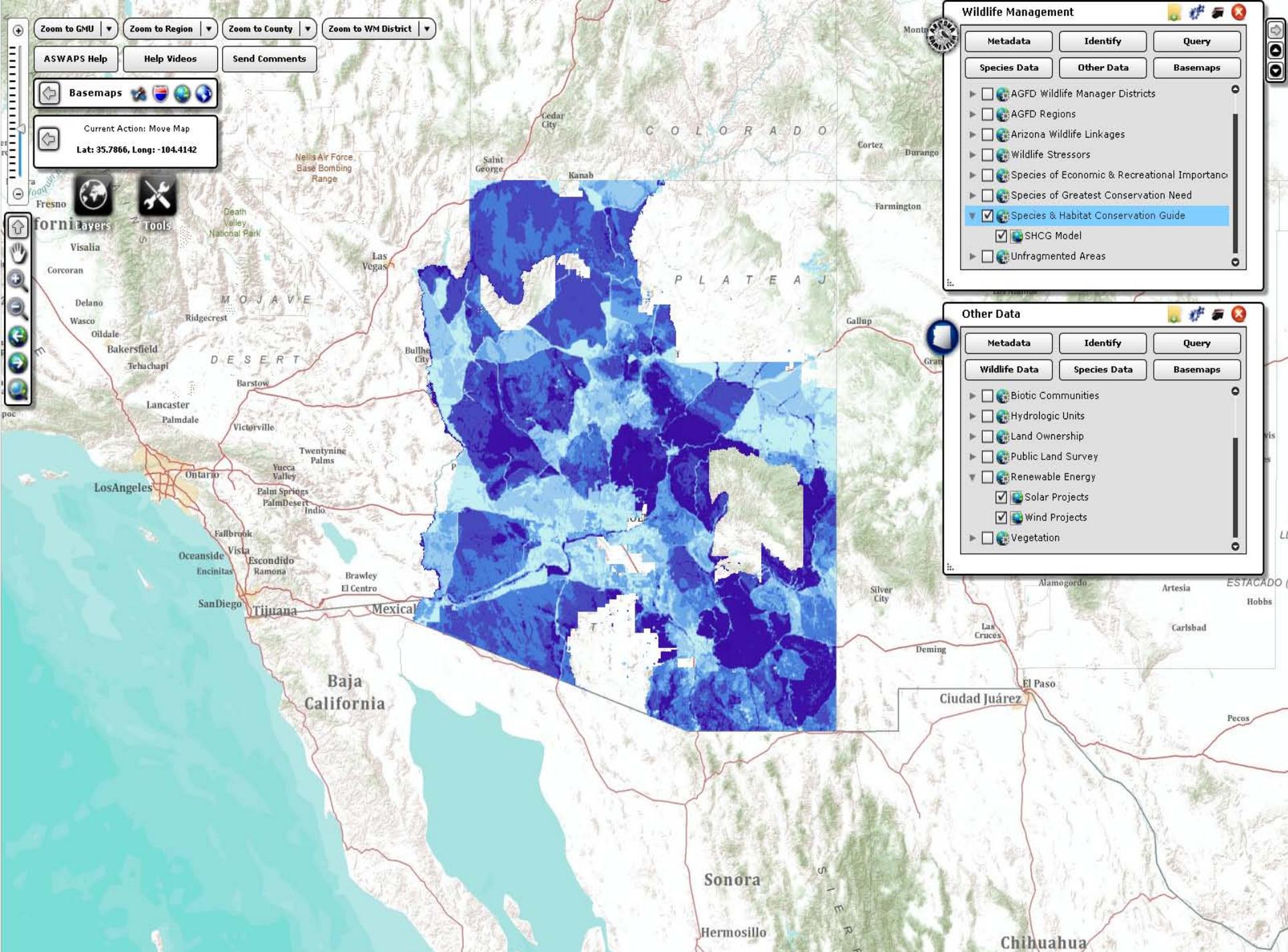


- Interactive, web-based GIS tool
- Allows users to view relationships between various data layers (including wildlife information)
- Query places of interest
- Share project information with colleagues and partners.



Species and Habitat Conservation Guide

- Least Conflict
- Lower cost
- Faster Project Implementation
- Cumulative Effects



Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

ASWAPS Help | Help Videos | Send Comments

Basemaps

Current Action: Move Map
Lat: 35.7866, Long: -104.4142

Navigation and tool icons including Home, Layers, Tools, and various map controls.

Wildlife Management

Metadata	Identify	Query
Species Data	Other Data	Basemaps

- AGFD Wildlife Manager Districts
- AGFD Regions
- Arizona Wildlife Linkages
- Wildlife Stressors
- Species of Economic & Recreational Importance
- Species of Greatest Conservation Need
- Species & Habitat Conservation Guide
 - SHCG Model
- Unfragmented Areas

Other Data

Metadata	Identify	Query
Wildlife Data	Species Data	Basemaps

- Biotic Communities
- Hydrologic Units
- Land Ownership
- Public Land Survey
- Renewable Energy
 - Solar Projects
 - Wind Projects
- Vegetation

Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

ASWAPS Help | Help Videos | Send Comments

Basemaps

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Wildlife Management

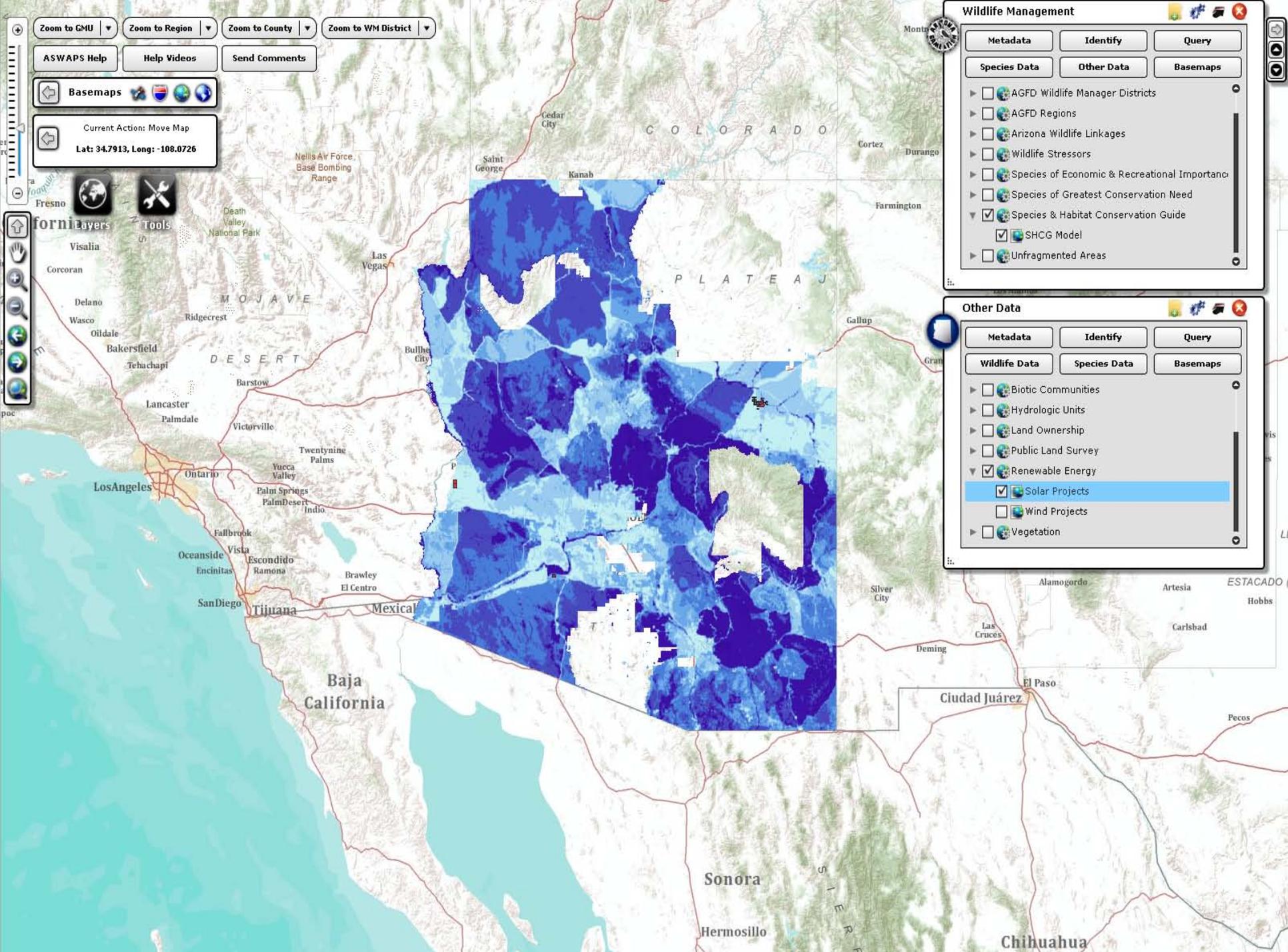
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Species Data	Other Data	Basemaps

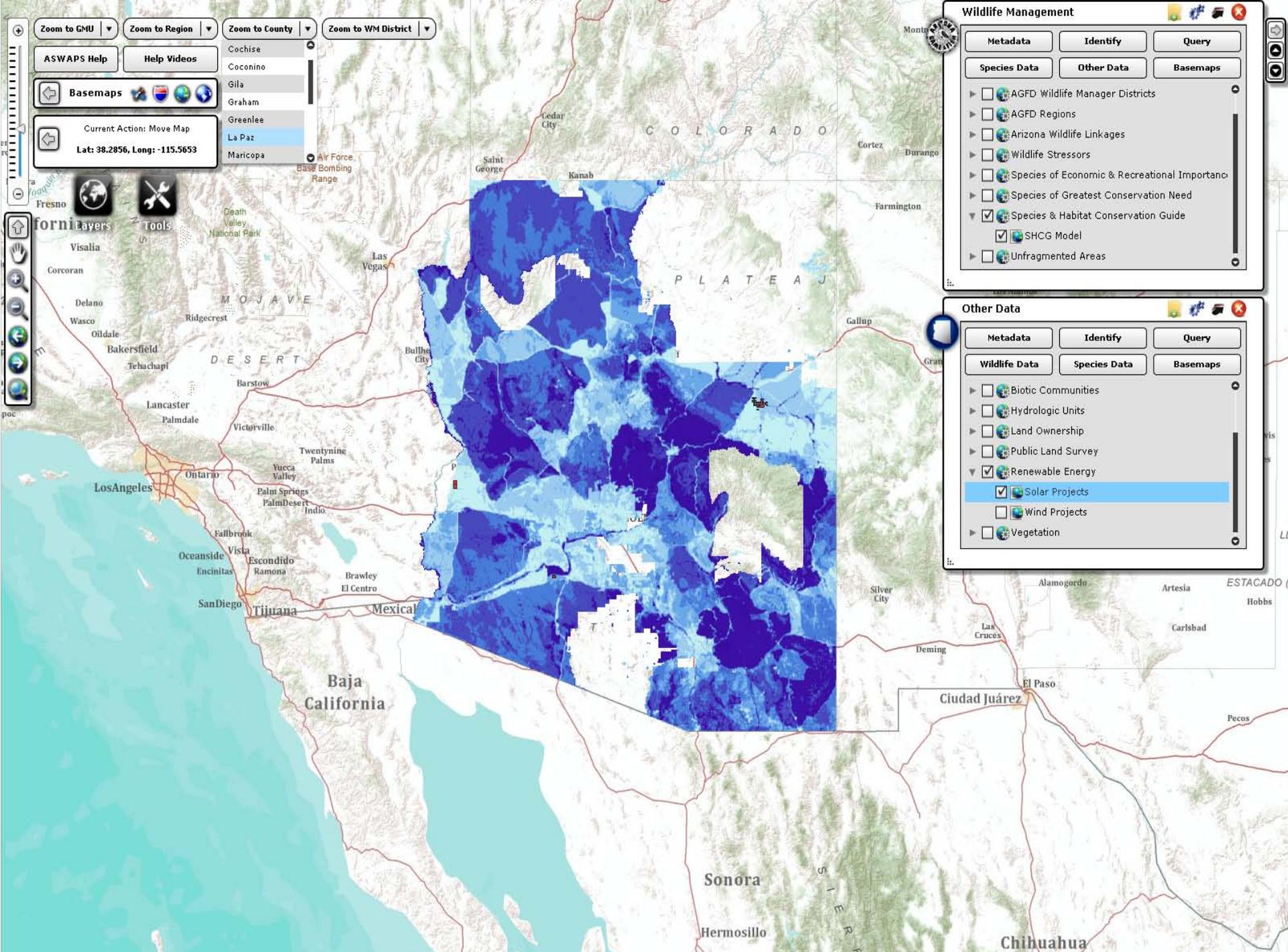
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Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

ASWAPS Help | Help Videos

Basemaps

Current Action: Move Map
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- Cochise
- Coconino
- Gila
- Graham
- Greenlee
- La Paz
- Maricopa

Layers

Tools

Wildlife Management

Metadata | Identify | Query

Species Data | Other Data | Basemaps

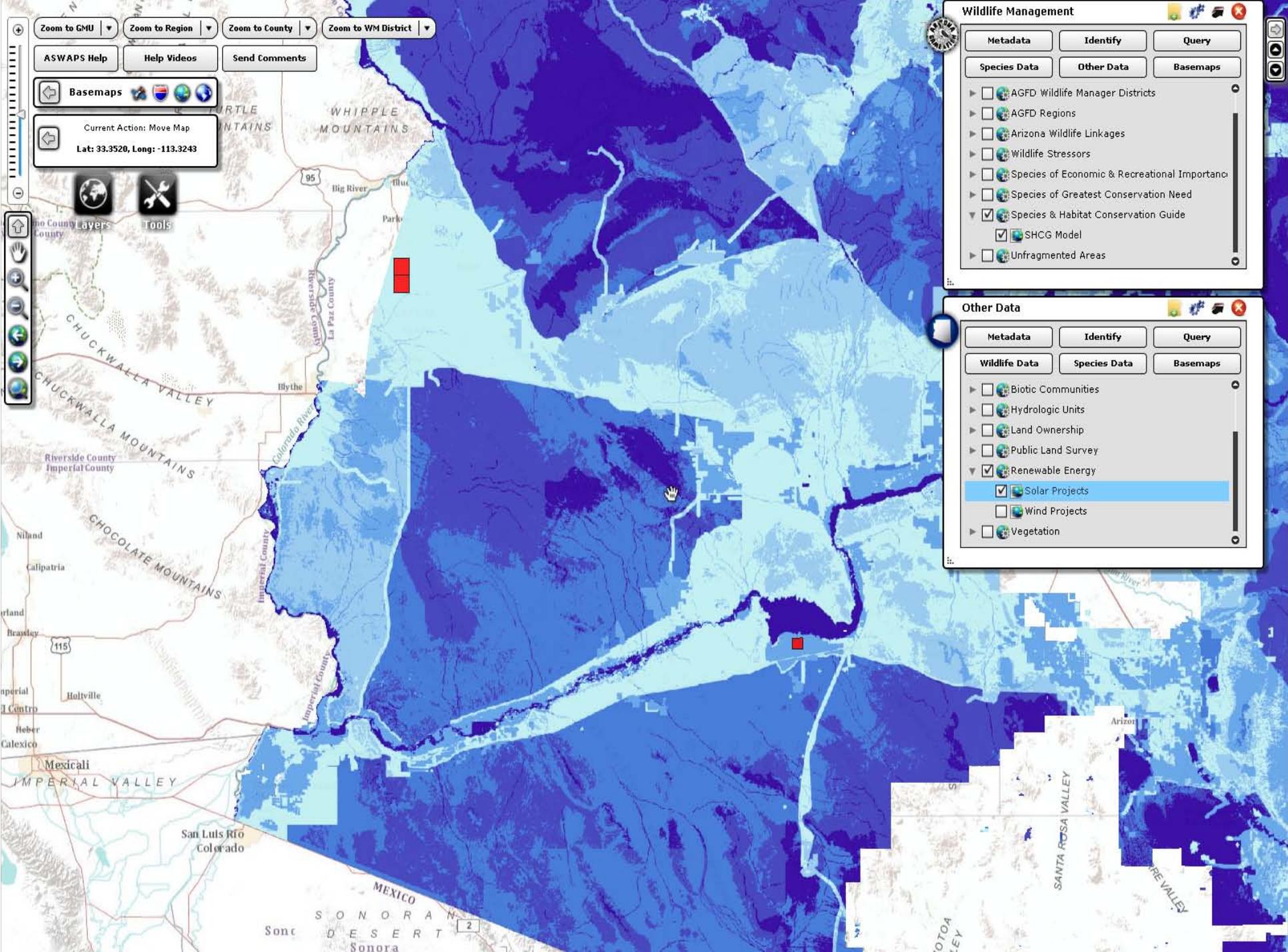
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Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

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Basemaps

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Wildlife Management

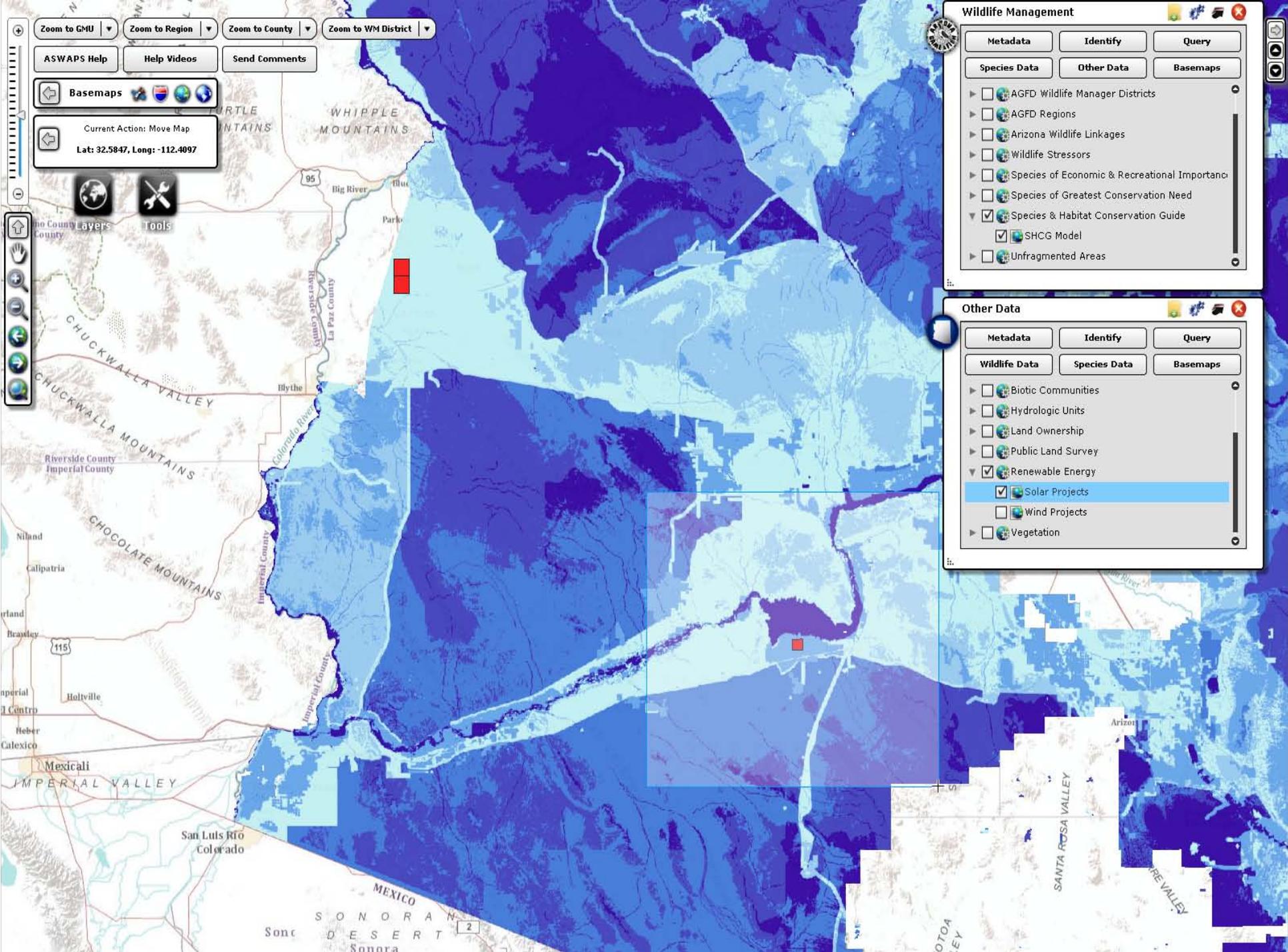
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Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

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Basemaps

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Wildlife Management

Metadata Identify Query

Species Data Other Data Basemaps

- AGFD Wildlife Manager Districts
- AGFD Regions
- Arizona Wildlife Linkages
- Wildlife Stressors
- Species of Economic & Recreational Importance
- Species of Greatest Conservation Need
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 - SHCG Model
- Unfragmented Areas

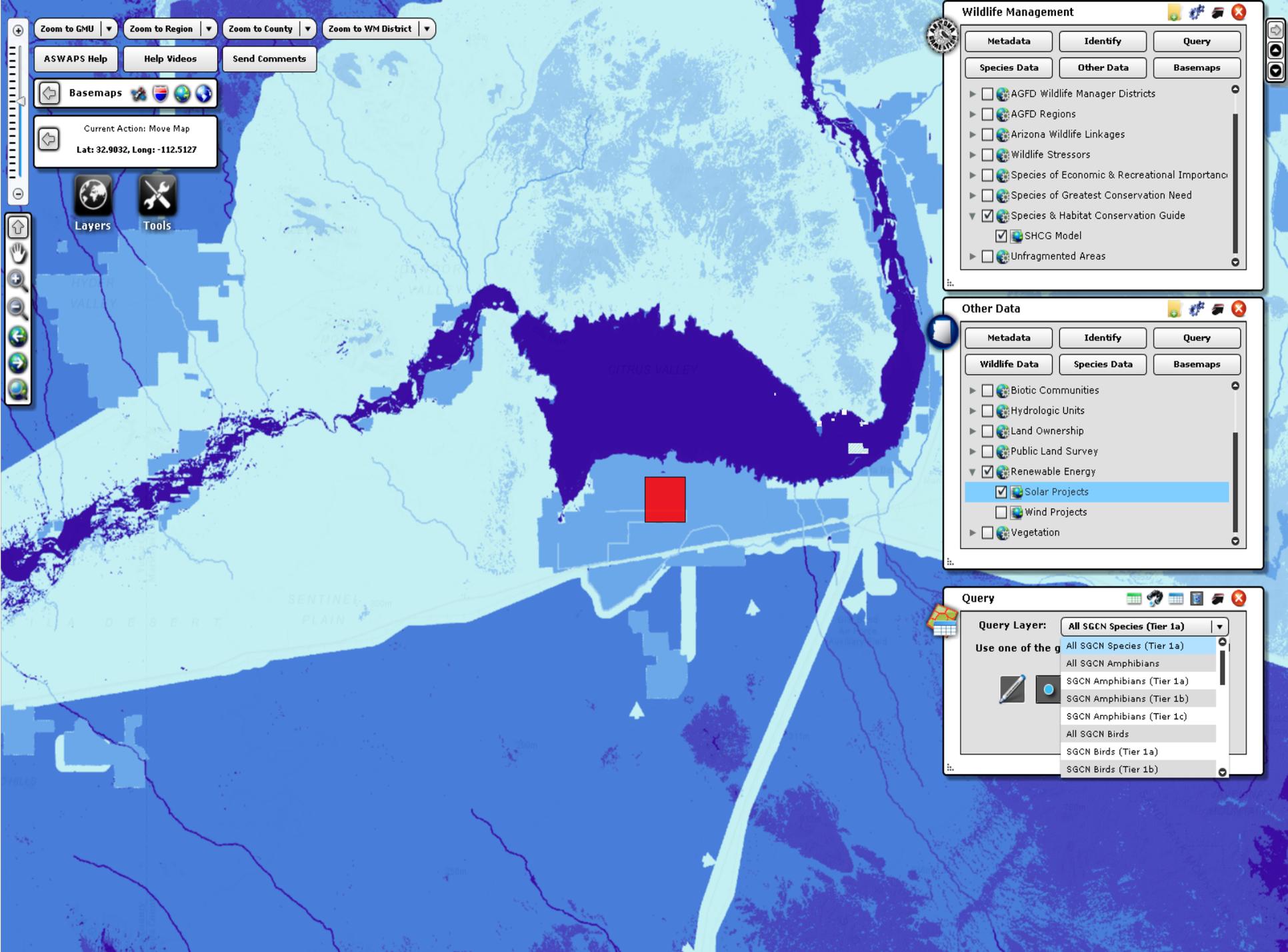


Other Data

Metadata Identify Query

Wildlife Data Species Data Basemaps

- Biotic Communities
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Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

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Basemaps

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Layers | Tools

Wildlife Management

Metadata Identify Query

Species Data Other Data Basemaps

- AGFD Wildlife Manager Districts
- AGFD Regions
- Arizona Wildlife Linkages
- Wildlife Stressors
- Species of Economic & Recreational Importance
- Species of Greatest Conservation Need
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- Unfragmented Areas

Other Data

Metadata Identify Query

Wildlife Data Species Data Basemaps

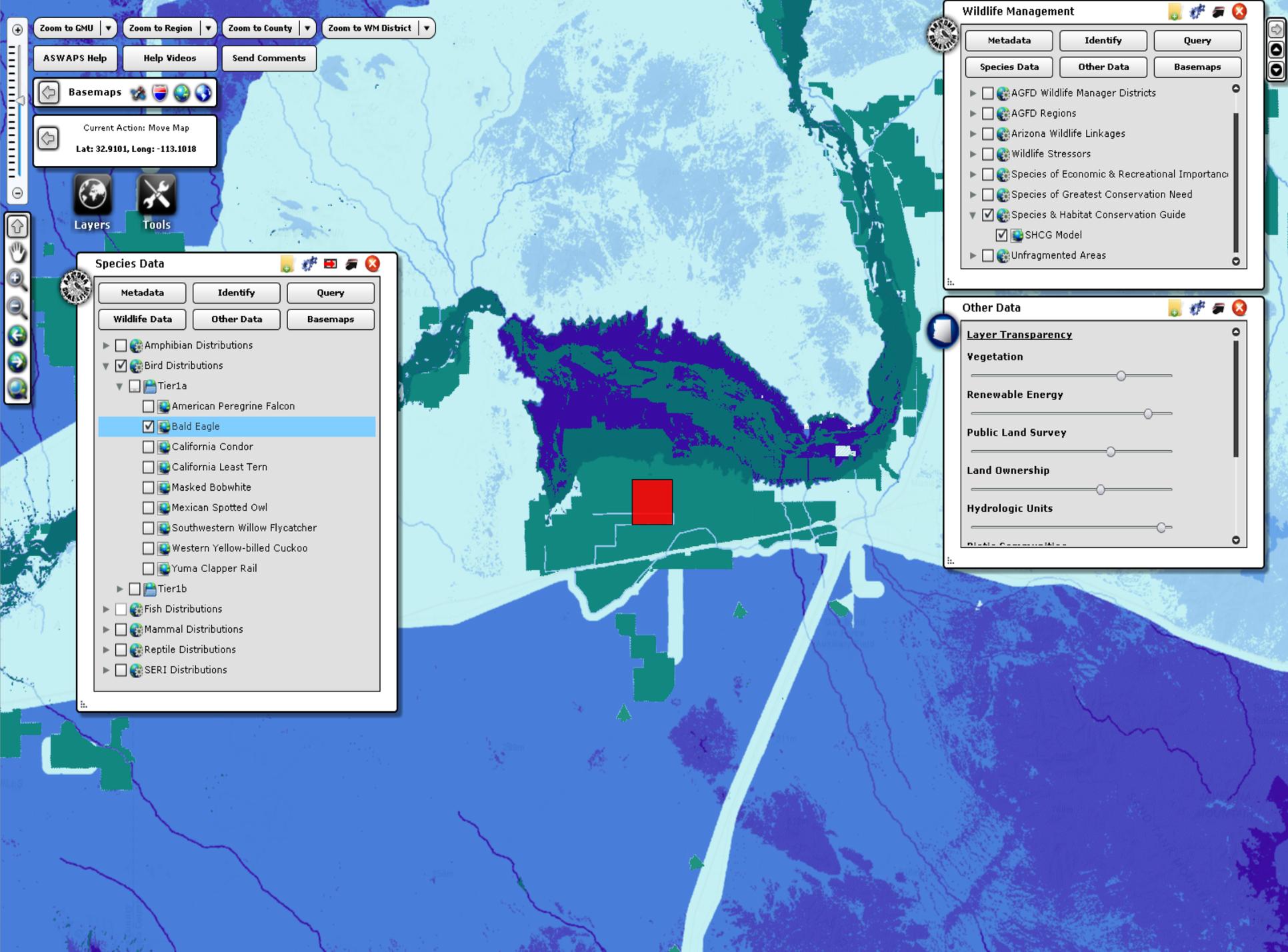
- Biotic Communities
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Query

Query Layer: All SGCN Species (Tier 1a)

Use one of the following:

- All SGCN Species (Tier 1a)
- All SGCN Amphibians
- SGCN Amphibians (Tier 1a)
- SGCN Amphibians (Tier 1b)
- SGCN Amphibians (Tier 1c)
- All SGCN Birds
- SGCN Birds (Tier 1a)
- SGCN Birds (Tier 1b)



Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

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Basemaps

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Layers | Tools

Wildlife Management

Metadata | Identify | Query

Species Data | Other Data | Basemaps

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Other Data

Layer Transparency

Vegetation

Renewable Energy

Public Land Survey

Land Ownership

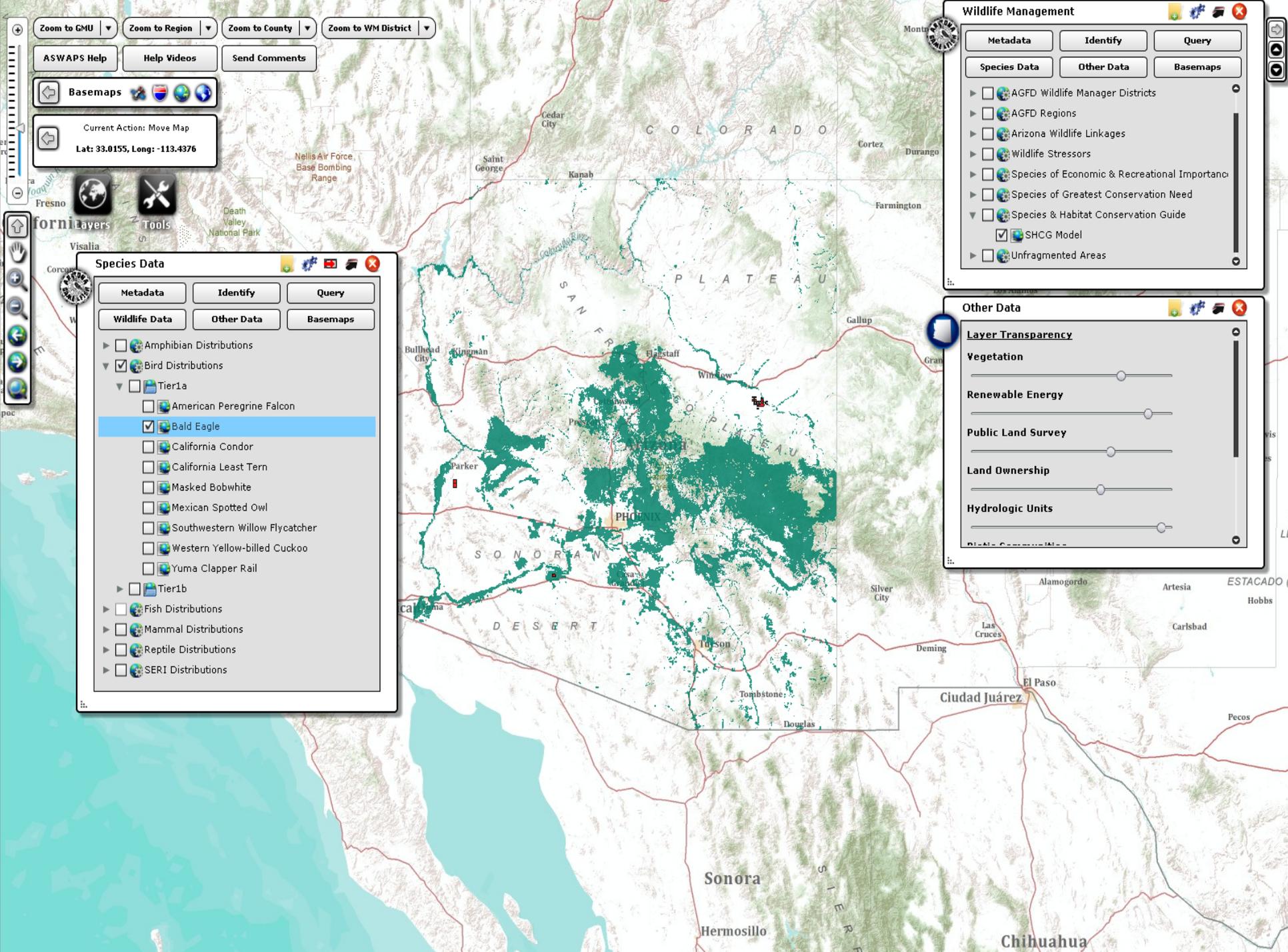
Hydrologic Units

Species Data

Metadata | Identify | Query

Wildlife Data | Other Data | Basemaps

- Amphibian Distributions
- Bird Distributions
 - Tier1a
 - American Peregrine Falcon
 - Bald Eagle
 - California Condor
 - California Least Tern
 - Masked Bobwhite
 - Mexican Spotted Owl
 - Southwestern Willow Flycatcher
 - Western Yellow-billed Cuckoo
 - Yuma Clapper Rail
 - Tier1b
- Fish Distributions
- Mammal Distributions
- Reptile Distributions
- SERI Distributions



Zoom to GMU | Zoom to Region | Zoom to County | Zoom to WM District

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Basemaps

Current Action: Move Map
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Fresno | Layers | Tools



Species Data

Metadata | Identify | Query

Wildlife Data | Other Data | Basemaps

- Amphibian Distributions
- Bird Distributions
 - Tier1a
 - American Peregrine Falcon
 - Bald Eagle
 - California Condor
 - California Least Tern
 - Masked Bobwhite
 - Mexican Spotted Owl
 - Southwestern Willow Flycatcher
 - Western Yellow-billed Cuckoo
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Wildlife Management

Metadata | Identify | Query

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Layer Transparency

Vegetation

Renewable Energy

Public Land Survey

Land Ownership

Hydrologic Units

Ciudad Juárez

Sonora

Chihuahua

Economic Analysis of Renewable Energy Development on Hunters



Renewable Energy Development Impacts to Wildlife/Wildlife Habitat Statewide



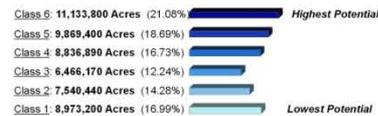
Species and Habitat Conservation Guide (SHCG) and Proposed Solar and Solar Plus Wind Locations

For Internal Use Only

Solar Locations
 Counties
 Tribal Lands

Solar Location Percentage of Total Area by SHCG Class

SHCG Totals for Arizona (excluding Tribal Lands)



Species and Habitat Conservation Guide (SHCG)

The Department considered five indicators of wildlife conservation value in modeling conservation potential across the state: Species of Greatest Conservation Need, Species of Economic and Recreational Importance, Sportfish, Unfragmented Areas, and Riparian Habitat. Each of these indicators, or sub-models, was developed as a separate layer that can be used independent of the SHCG model.

The Department's Species and Habitat Conservation Guide is intended to identify areas of wildlife conservation potential in Arizona at a landscape/statewide scale, ultimately guiding the Department's strategic wildlife goals and objectives. This product represents the current understanding of these areas as of this point in time, and is subject to continual refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate the refinement of this assessment.

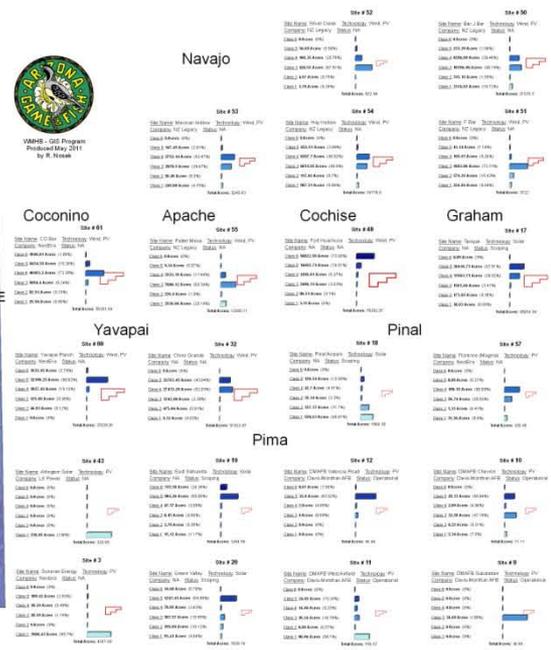
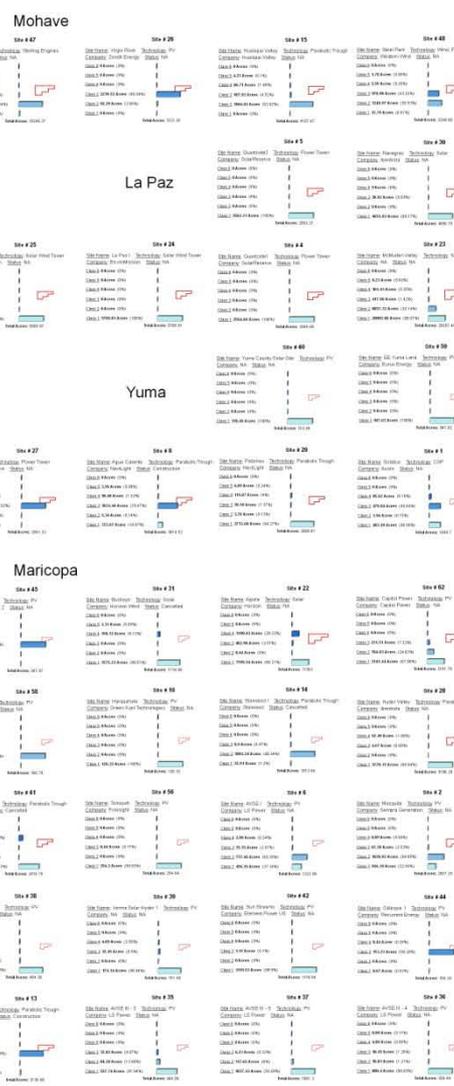
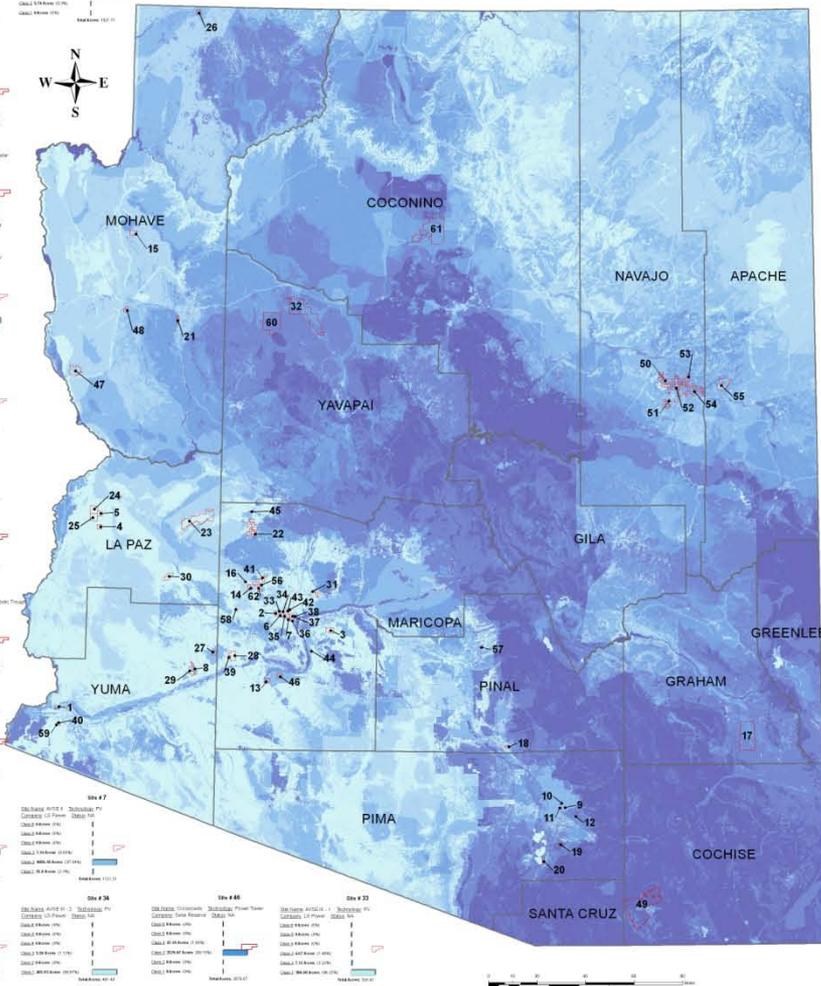
All layers (SGCN, SERI, Sportfish, Riparian, and Unfragmented Areas) were rescaled from 1-10 and combined per the following equation:

$$SHCG = SGCN + SERI + Sportfish + Riparian + Unfragmented Areas$$

The resulting gradient was reclassified to six classes based on quantiles in ArcMAP. These classes identify areas on the landscape based on their wildlife conservation potential where a class 1 (light blue) indicates the lowest potential and a class of 6 (dark blue) indicates the highest wildlife conservation potential.



WMS - GSI Program
 Produced May 2011
 by R. Rosen



Assumptions



- All calculations are performed for sales to an entire game management unit (GMU).
- The potential for loss is calculated as the percentage of the GMU covered by the outlined project area that overlaps with range maps for the animals.
- No ownership or other hunting restrictions are considered.
- Loss of habitat, habitat fragmentation, and loss of hunter access have not been accounted for.
- This does not consider loss of wildlife watching or other non consumptive use.

Determining Potential Losses



Revenue

of permits sold * Cost of tag + license

Economic

of hunter days * daily expenditures per hunter¹

Demand

(# of first choice applicants / # permits issued) * economic

¹From the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation- Arizona by the US Fish and Wildlife Service

Potential Losses Per Installation



Game	Tags Lost	Revenue to the Department	Economic Value to the Community	Demand for Service
Deer	0 - 157	\$0 - \$59,000	\$0 - \$115,000 00	\$0 – \$1,076,000
Pronghorn	0 - 7	\$0 - \$1,300	\$0 - \$8,700	\$0 - \$417,000

Possible Next Steps



- **Development of Geospatial Planning Tool to publicly promote the Species and Habitat Conservation Guide**
- **Upgrade the Arizona Online Environmental Review Tool**
- **Continue to build relationships with counties**
 - Work to include language similar to Navajo ordinance language.
- **Create an incentivized program for industry**
 - Use the SHCG...less conflict means less regulatory tape.
 - Possibly partner with financial institutions to favor awarding projects that develop in less sensitive/less conflict areas based on the SHCG
- **Revise Habitat Compensation Policy to tier to current products (i.e. Species and Habitat Conservation Guide)**
 - Currently being considered through our mitigation team

Possible Next Steps (cont.)



- **Revise existing statutes for:**
 - **ACC**
 - ✦ ARS 40-360 Definitions – Change definition of “Plant” to include all electric generation of 50MW or more.
 - **County Permitting**
 - ✦ ARS 49-112, Section D – Add language that requires notification to the Arizona Game and Fish Department.
 - **City Permitting**
 - ✦ ARS 9-468, Section A1 – Add language that requires notification to the Arizona Game and Fish Department.
 - **ARS 17?**