

# District Office

## REA Application Example

Southwest District, CO  
REA Training  
Montrose, CO  
October, 2016

# Impacts of Fire, Invasives, and Climate Change on select terrestrial ecotypes and Potential Restoration/Seed Banks within NCAs and Canyon of the Ancients NM



# General Project Description

## (four parts)

1. Can the REA's/Landscape Approach assist with identifying areas of potential **restoration** within the **NCA's** and **Canyons of the Ancients** National Monument?

# General Project Description

2. Could the focus be on **salt desert** and **sagebrush** ecosystems? Within these areas, we'd be interested to **identify** and **prioritize** areas that are both intact (**preservation** areas) as well as vulnerable/highly impacted areas (**restoration** areas). How do we prioritize these areas?

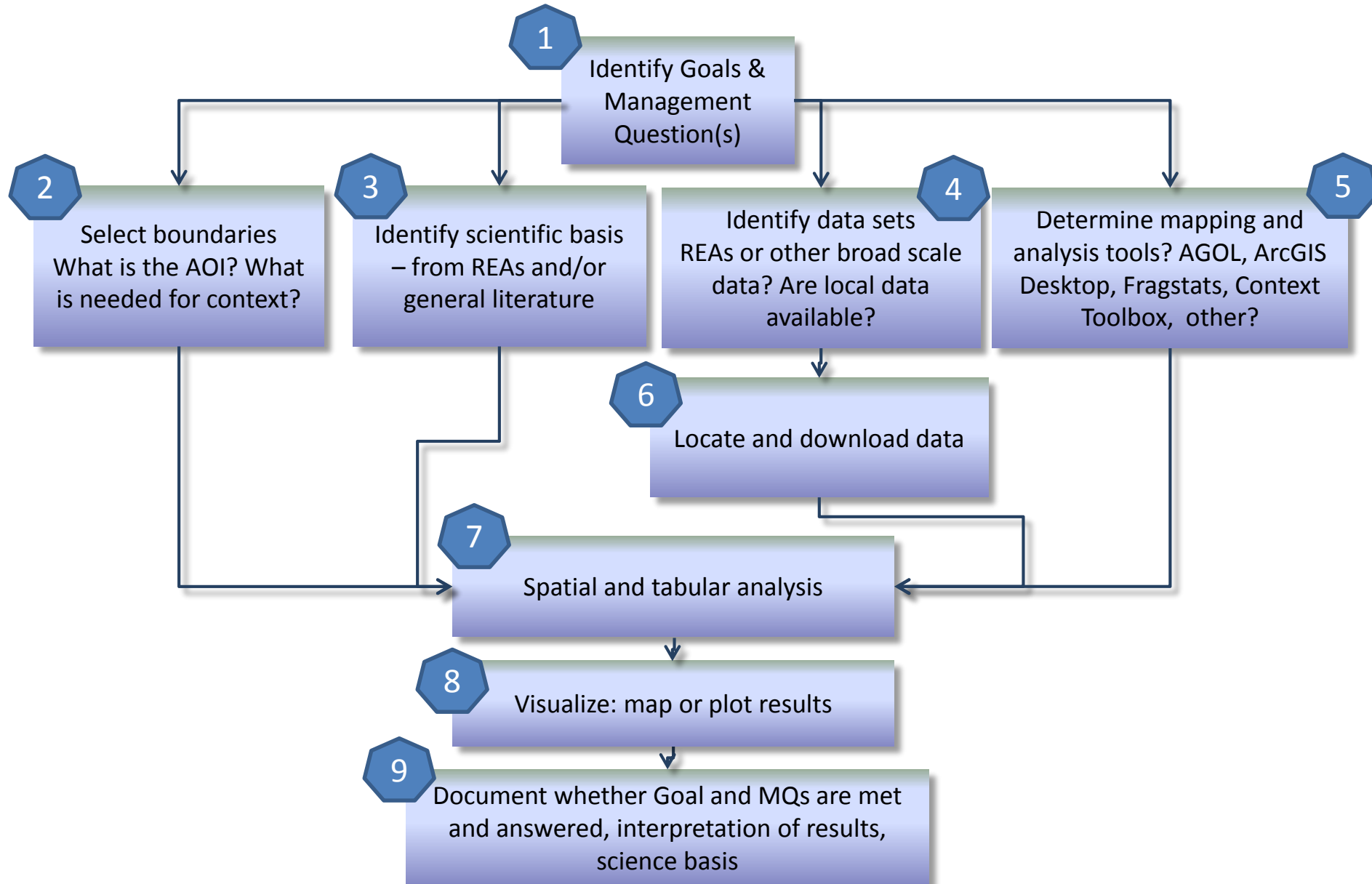
# General Project Description

3. Could the impacts from the current/potential change agents of **invasives**, **fire**, and **climate change** be quantified within these ecosystems?

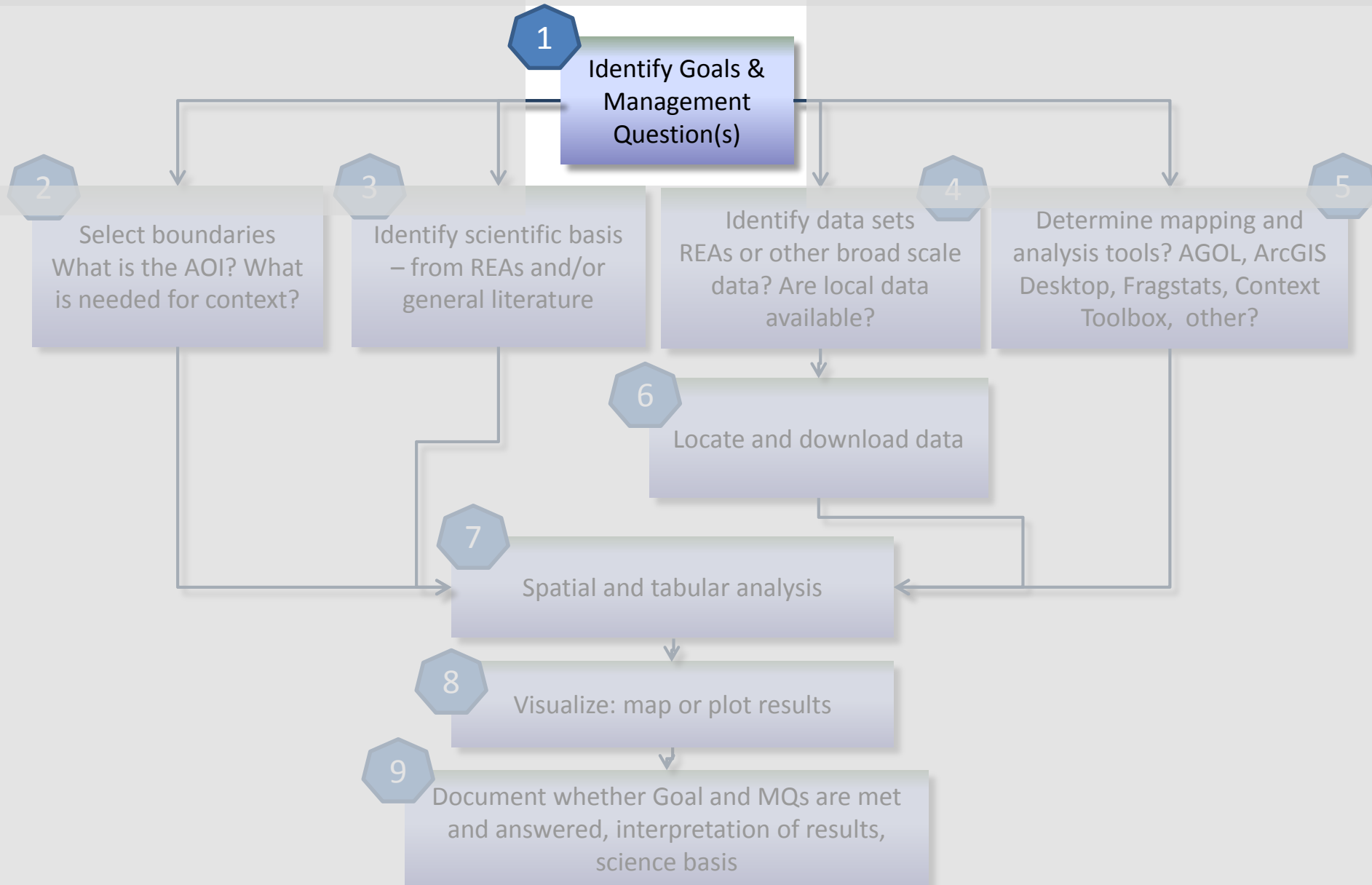
# General Project Description

4. What does an “intact” seed bank look like vs. an “impacted” seed bank. This will help determine appropriate seeding and restoration for degraded areas or when areas are impacted (e.g. fire).

# Broad Scale Analysis Road Map



# Broad Scale Analysis Road Map



# Identify Goals & Management Question(s)

(10 questions)

1. What is the status of the NCAs and how does that compare within the area/region?
2. Where are salt desert and sagebrush ecosystems and what is their status?
3. Where has salt desert or sagebrush been impacted by fire, invasives, and climate change?

# Identify Goals & Management Question(s)

Future Vulnerability

(10 questions)

3. Where is salt desert or sagebrush more or less vulnerable to fire?
4. Where is salt desert or sagebrush more or less vulnerable to climate change? - **Hold**
5. Where are salt desert or sagebrush most and least vulnerable to both fire and climate change? – **Hold**
7. Do treatments or fires in vulnerable areas have poorer outcomes than in less vulnerable areas? - **Hold**

# Identify Goals & Management Question(s)

(10 questions)

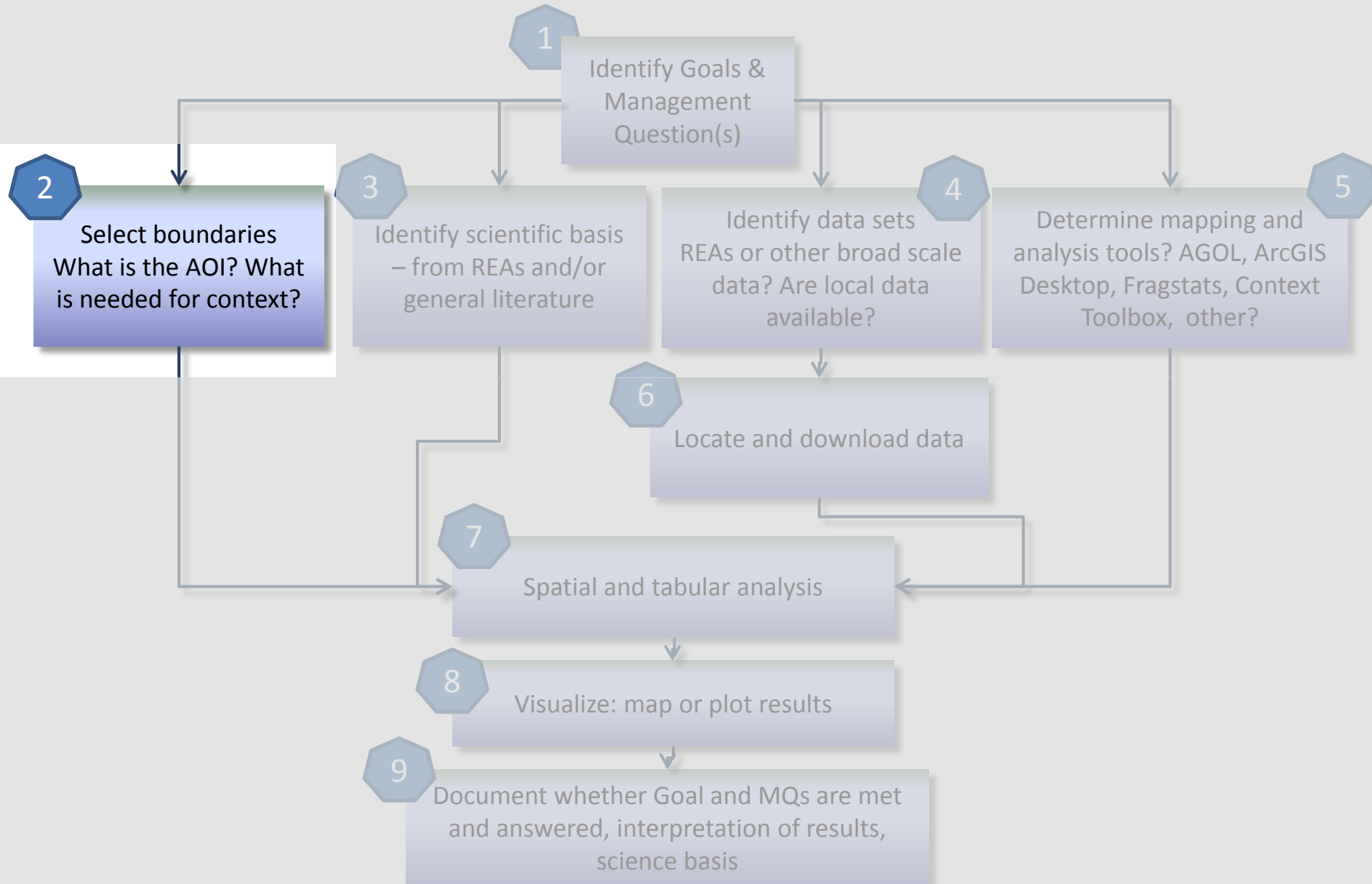
Seed Bank surrogates

8. Where are intact seed banks likely to be? -

**Hold**

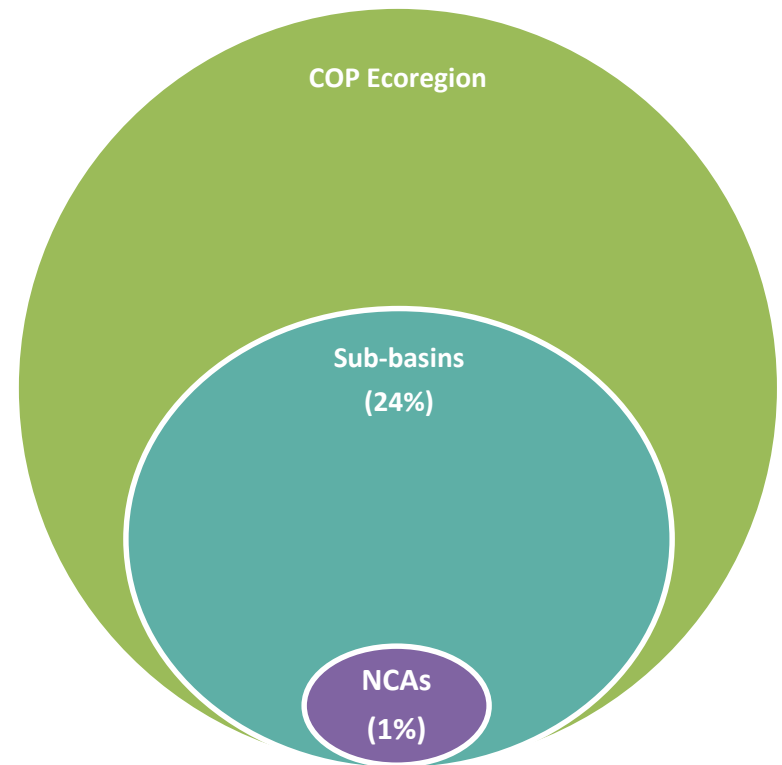
9. Where are impacted seed banks likely to be? - **Hold**

# Broad Scale Analysis Road Map

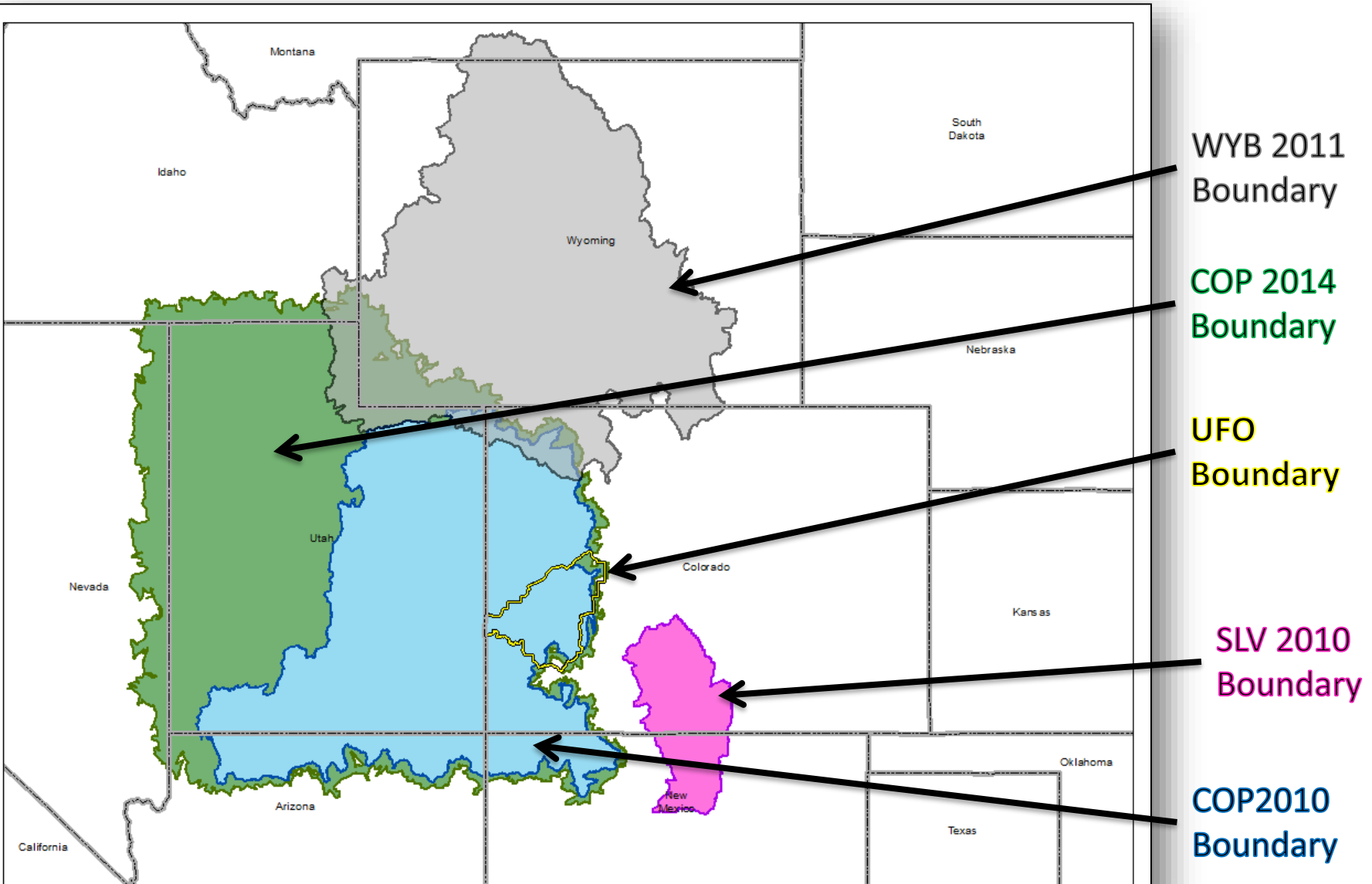


## Select boundaries: What is the AOI? What is needed for context?

- Areas of interest context: Multiscale analysis
  - Large: COP Ecoregion
  - Medium: Sub-basins
  - Small: NCAs
- The need for context lies within understanding veg. distributions and status patterns to better identify and prioritize treatments and/or restoration

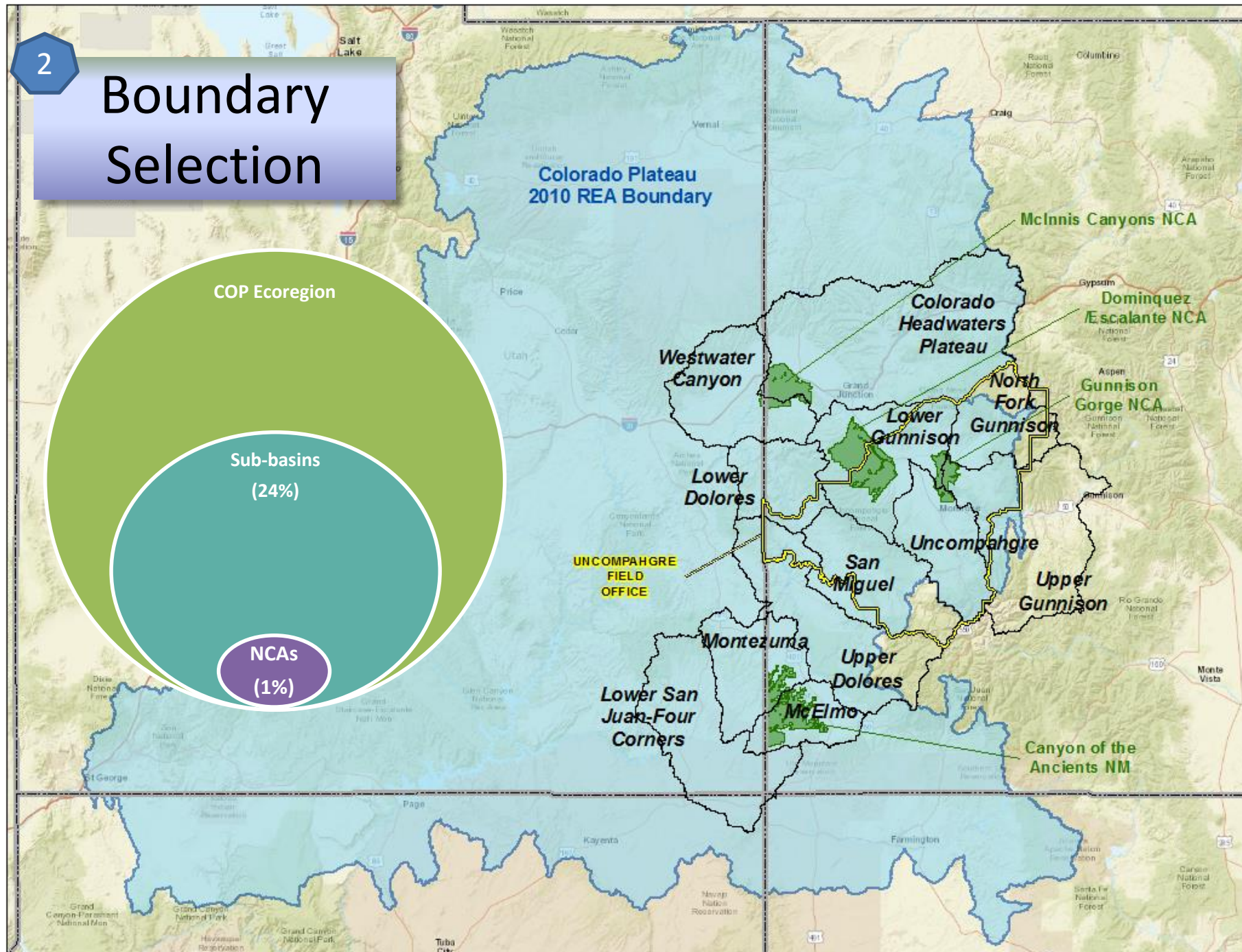


# Boundary Selection

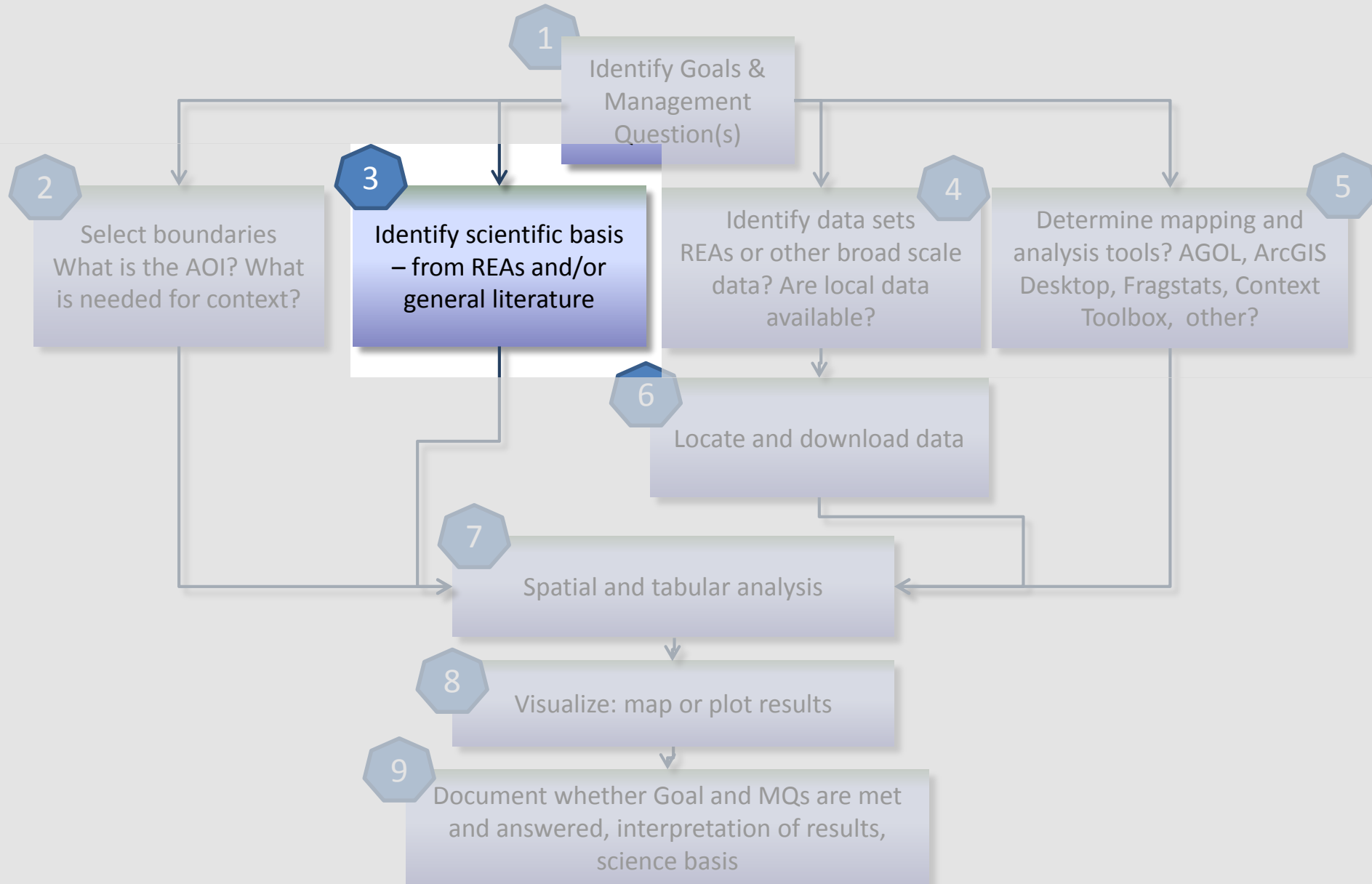


2

# Boundary Selection



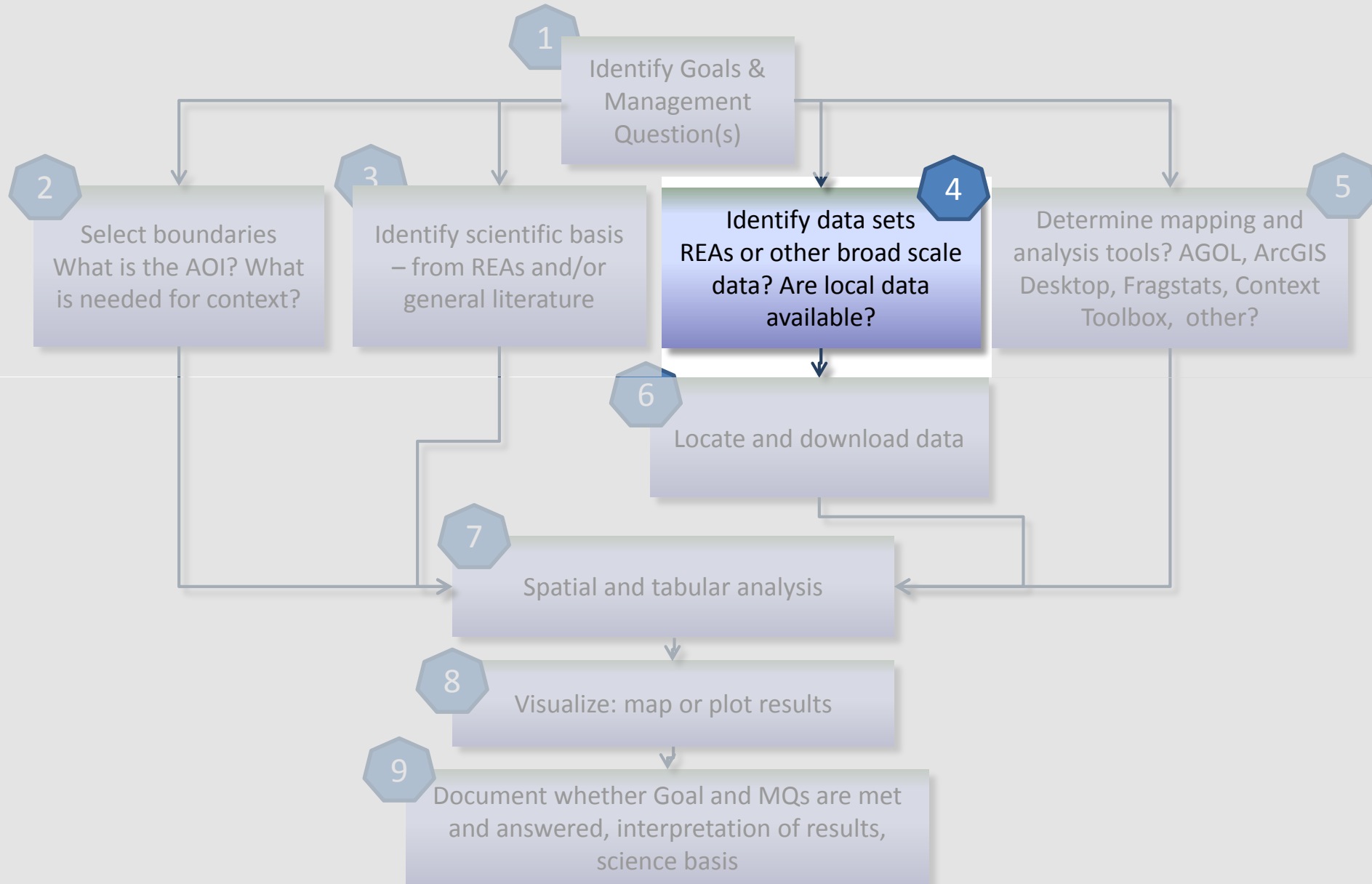
# Broad Scale Analysis Road Map



## Identify scientific basis – from REAs and/or general literature

- Colorado Plateau (2010) & the UT/Colorado Plateau refresh/step-down (2014) REAs are the science basis for this comparison/analysis

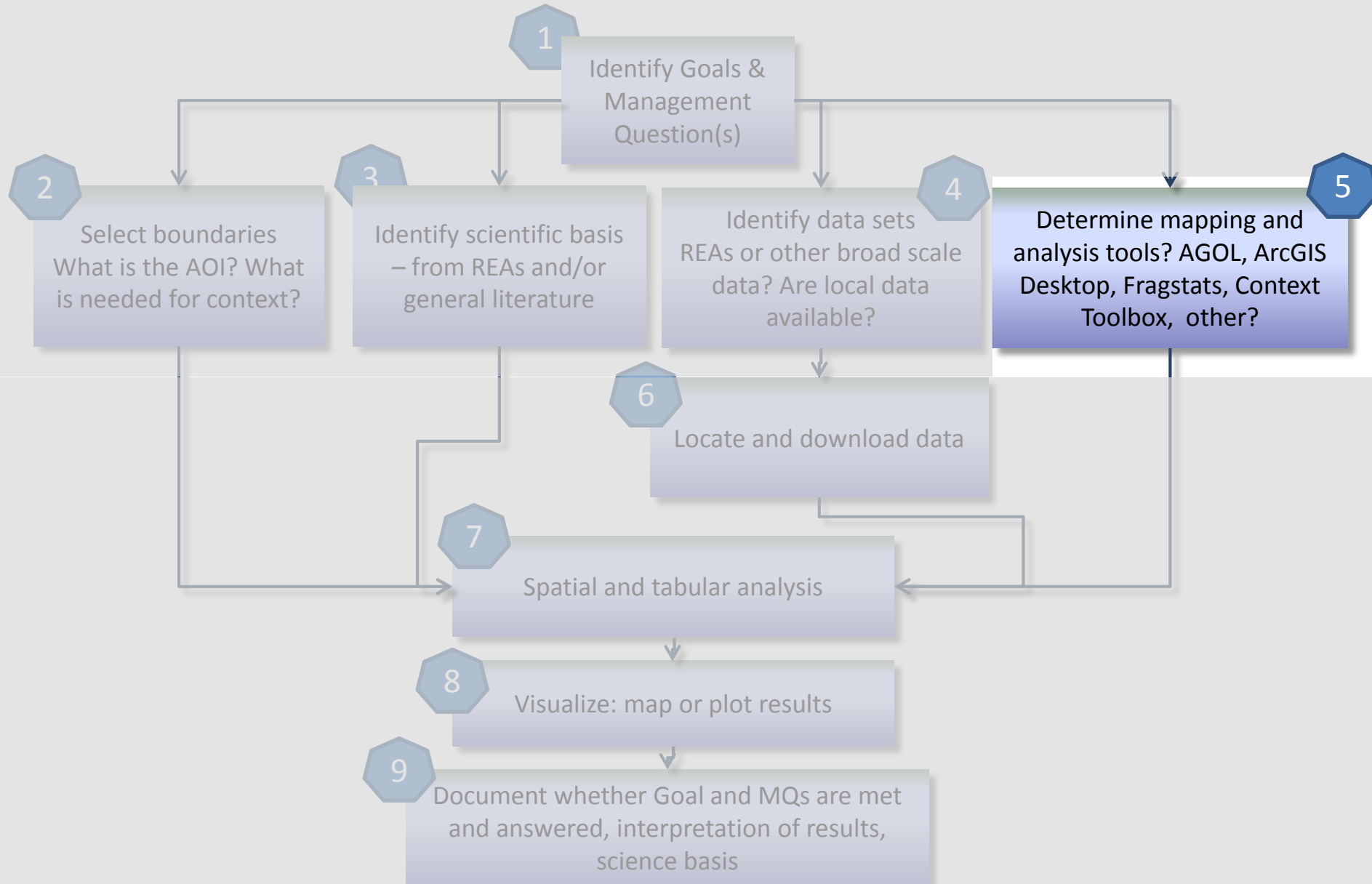
# Broad Scale Analysis Road Map



## Identify data sets: REAs or other broad scale data? Are local data available/useful?

- Boundaries (COP 2010/NHD/NCAs)
- Development (COP 2014): Colorado Plateau 1KM Terrestrial Intactness
- Salt Desert Distribution & Status (COP 2010/COP 2014)
  - Inter-Mountain Basins Mixed Salt Desert Scrub
- Sagebrush Distribution & Status (COP 2010/COP 2014)
  - Inter-Mountain Basins Big Sagebrush Shrubland
  - Inter-Mountain Basins Montane Sagebrush Steppe
- Fire (COP 2010)
  - Long-term high potential of human and naturally-caused fire occurrence
  - Historical locations of fire occurrences
- Invasives (COP 2010): Areas adverse to fire (Uncharacteristic Native Vegetation)
- Climate change (COP 2010/COP 2014): Potential For Change (4KM) - **Hold**
- Seed bank and local treatments (UFO) - **Hold**

# Broad Scale Analysis Road Map



Determine mapping and analysis tools:  
ArcGIS online, ArcGIS Desktop, Fragstats, Context Toolbox?

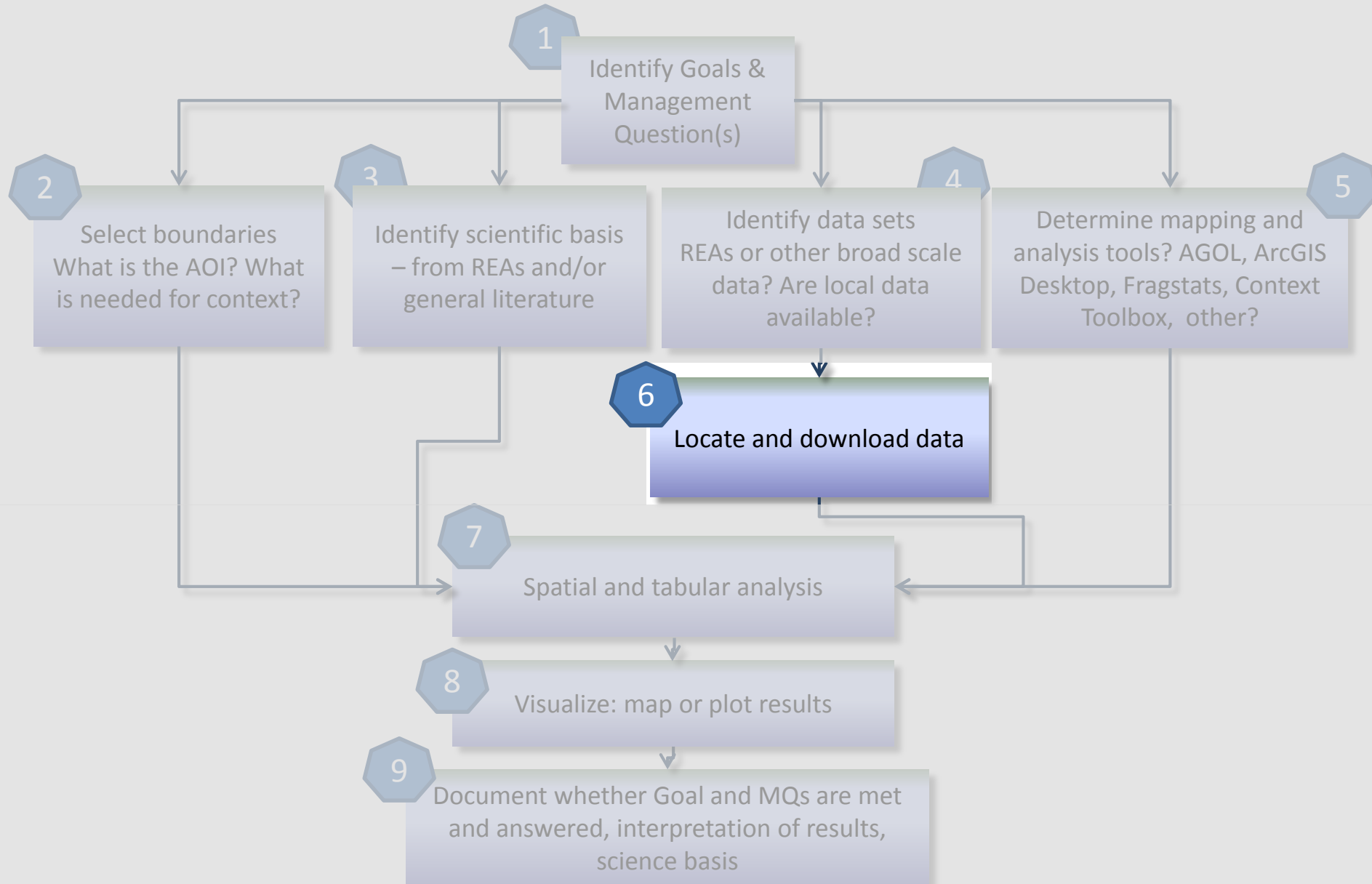
## Context Toolbox



## ArcGIS Desktop



# Broad Scale Analysis Road Map



# Locate and download data



"Landscape Approach Data Portal"  
"BLM Landscape Approach Data"

*[http://www.blm.gov/wo/st/en/prog/more/Landscape\\_Approach/dataportal.html](http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/dataportal.html)*

# Locate and download data

## Landscape Approach Data Portal

Data, Maps, and Models from BLM's Landscape Approach Initiatives

[Help](#) [About](#) [Feedback](#)

[Home](#) [Search All](#) [Browse All](#) [AIM](#) [FIAT](#) [Greater Sage-Grouse](#) [REAs](#) [Secretarial Order 3336](#) [How To](#)

### Home

The **BLM's Landscape Approach** Data Portal is a one-stop source for **geospatial data, maps, models and reports** produced by BLM's landscape initiatives including the:

- Assessment, Inventory & Monitoring (AIM) strategy
- Fire & Invasives Assessment (FIAT) program
- Greater Sage-Grouse (GRSG)
- Rapid Ecoregional Assessments (REAs)
- Secretarial Order 3336, Integrated Rangeland Fire Management Strategy (SO3336).

To learn more about each initiative and the products that are available for them, click on the [images to the right](#) or the [tabs above](#). You can find products from all of these initiatives by using the [Search or Browse tabs](#) above.

On the Search page, enter any keyword(s) in the Text box or search by:

- Initiative — such as *AIM, FIAT, REA, or sage-grouse*
- Subject — such as *sage-grouse, soils, intactness*
- Place — such as *CO, Northern Great Basin*.

You can conduct [advanced searches](#) on the Search page such as filtering by content type (e.g., data, map, model) or geographic extent. You can even [search other data portals](#) simultaneously, including USGS Science Base, Data.gov, and ArcGIS Online. Click on this [How To...](#) link for instructions.

On the Browse page, simply click each header to expand the various categories. For example, you can browse by Content Type (data, maps, models) or a specific REA (e.g., Colorado Plateau REA).

This portal was built using Geoportal Server 1.2.5 as part of the broader BLM ArcGIS for Server program. Please read the pages describing our [Disclaimer](#) and [Privacy](#) or [Contact Us](#).

# Locate and download data

**Landscape Approach Data Portal**  
Data, Maps, and Models from BLM's Landscape Approach Initiatives

Help About Feedback

Home Search All Browse All AIM FIAT Greater Sage-Grouse REAs Secretarial Order 3336 How To

## Rapid Ecoregional Assessments (REAs)

The **Rapid Ecoregional Assessments** (REAs) seek to identify important resource values and patterns of environmental change that may not be evident when managing smaller, local land areas. REAs look across all lands in an ecoregion to identify regionally important habitats for fish, wildlife, and species of concern. REAs then gauge the potential of these habitats to be affected by four overarching environmental change agents: climate change, wildfires, invasive species, and development (both energy development and urban growth). All the data, maps and models produced for the REAs can be found in this portal.

Click on an REA to view related data & maps  
Data are available only for publicly released REAs as seen in the map below.

### RAPID ECOREGIONAL ASSESSMENTS (REAs)

Boundaries by Publication Year

LANDSCAPE ASSESSMENTS

Publication Year

- Released
- 2017

\* WYB Volume 1 release 2016  
Volume 2 release 2017

Map produced by Bureau of Land Management - September 2016

### Resources

- REA Downloadable Data
- REA Live Map Services
- REA Documents
- REA Static Maps
- REA Models

Find data using a keyword search

or [Browse](#) by REA or Category

### Featured Documents

- [Central Basin and Range \(CBR\)](#)
- [Colorado Plateau \(COP\)](#)
- [Madrian Archipelago \(MAR\)](#)
- [Middle Rockies \(MIR\)](#)
- [Mojave Basin and Range \(MBR\)](#)
- [Northern Great Basin \(NGB\)](#)
- [North Slope \(NOS\)](#)
- [Northwestern Plains \(NWP\)](#)
- [Seward Peninsula \(SNK\)](#)
- [Sonoran Desert \(SOD\)](#)
- [Wyoming Basin \(WYB\) \\*Vol 1 2016](#)
- [Yukon Kuskokwim \(YKL\)](#)

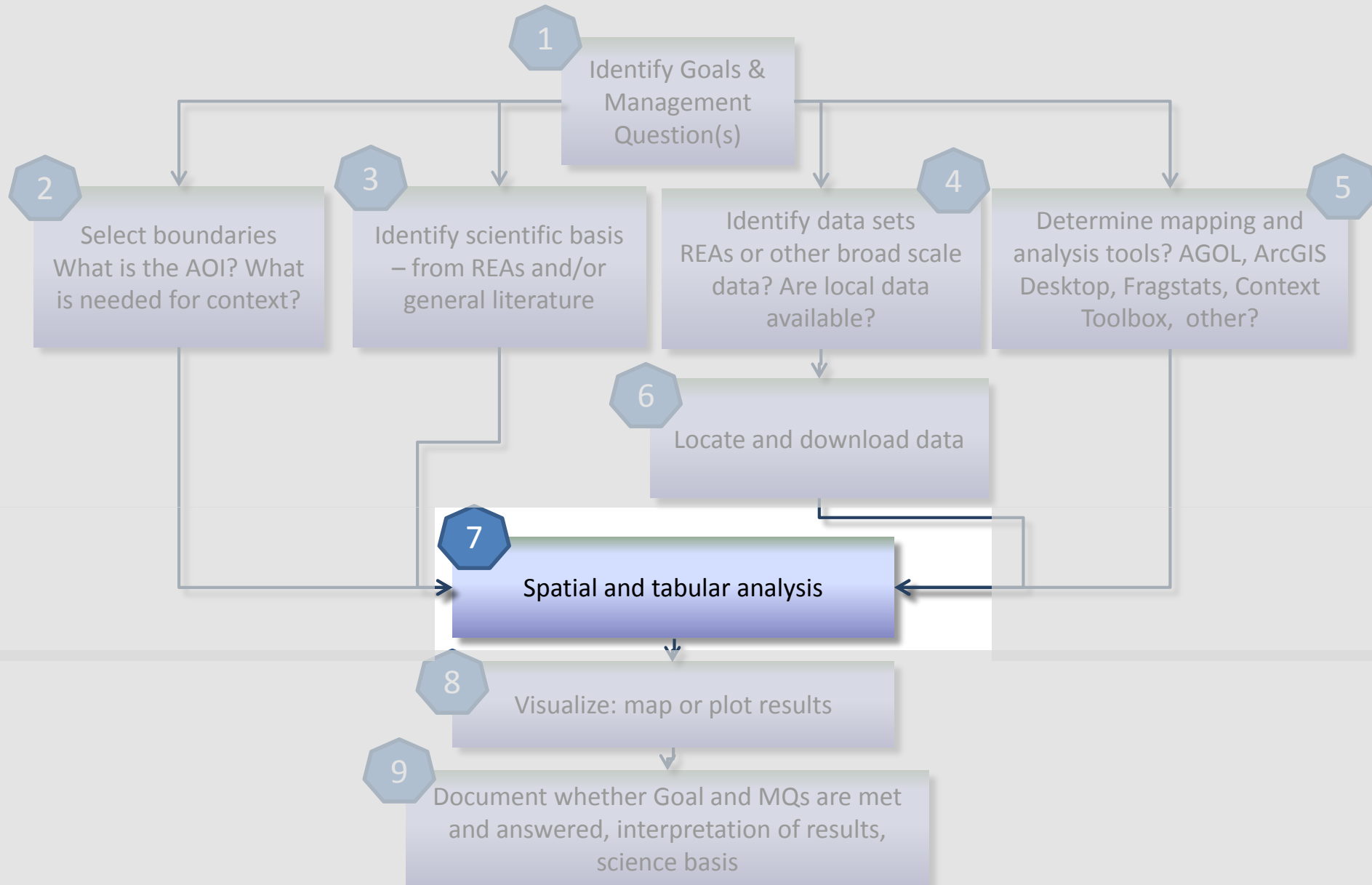
Click  
the  
text...

Click on  
the  
map...

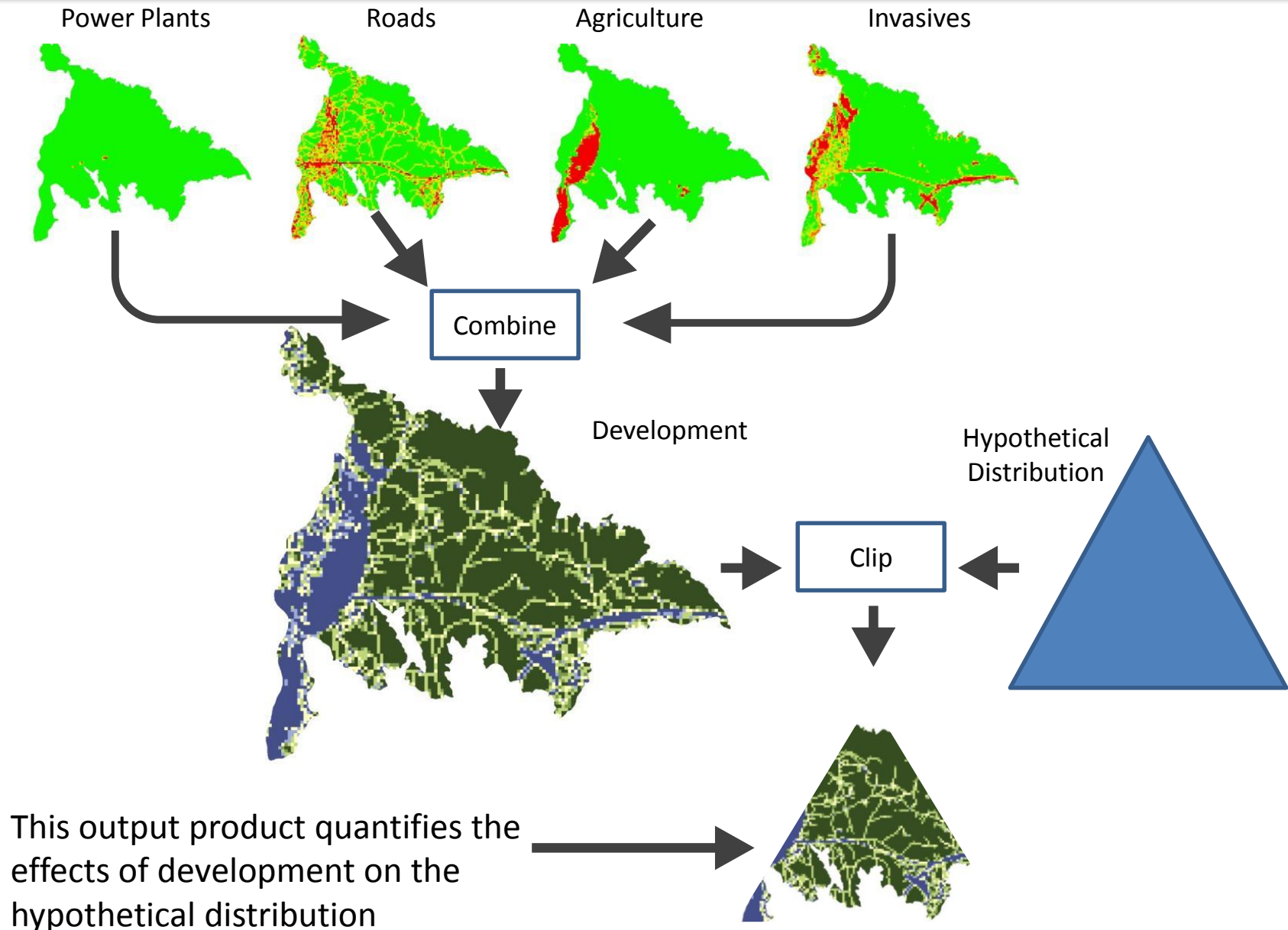
Type in  
text for  
what  
you  
seek

OR...

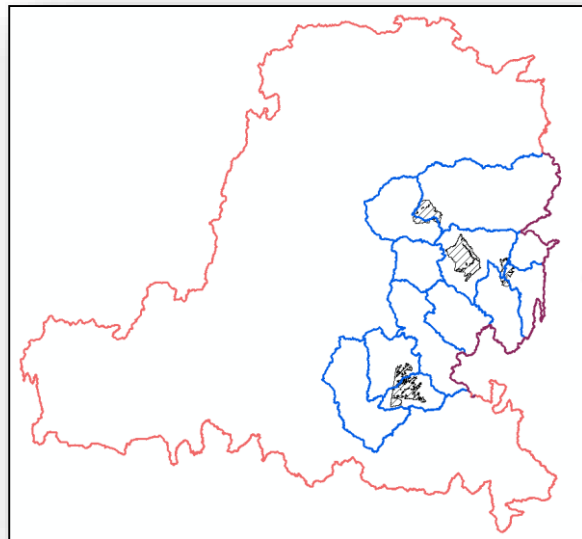
# Broad Scale Analysis Road Map



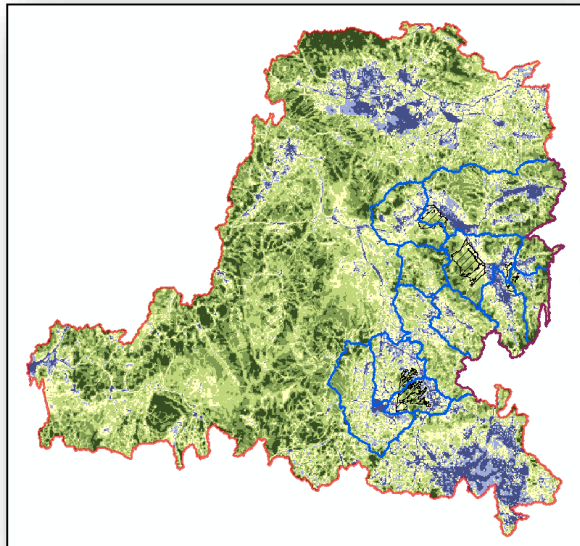
# Spatial and tabular analysis



# Spatial and tabular analysis

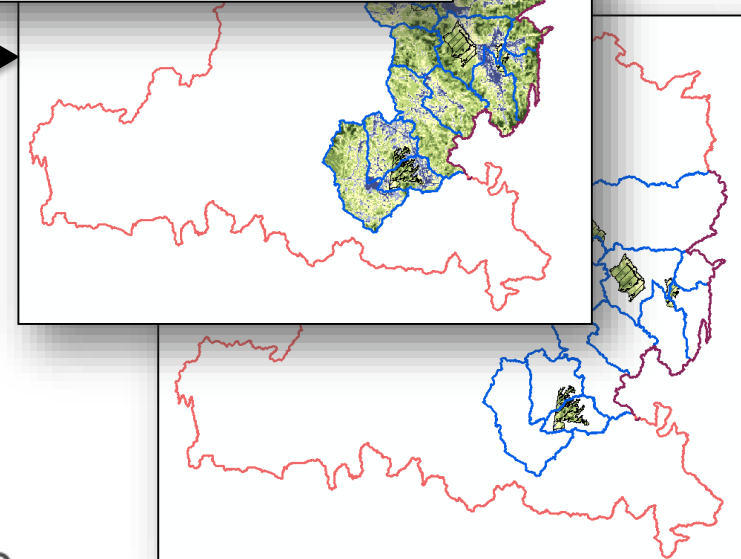
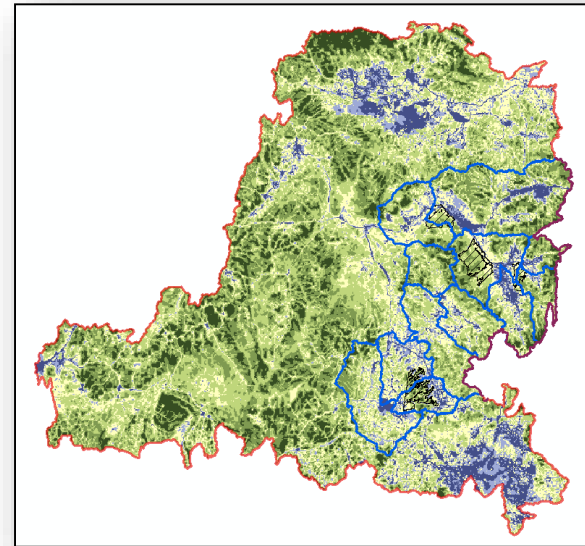


3 Boundaries

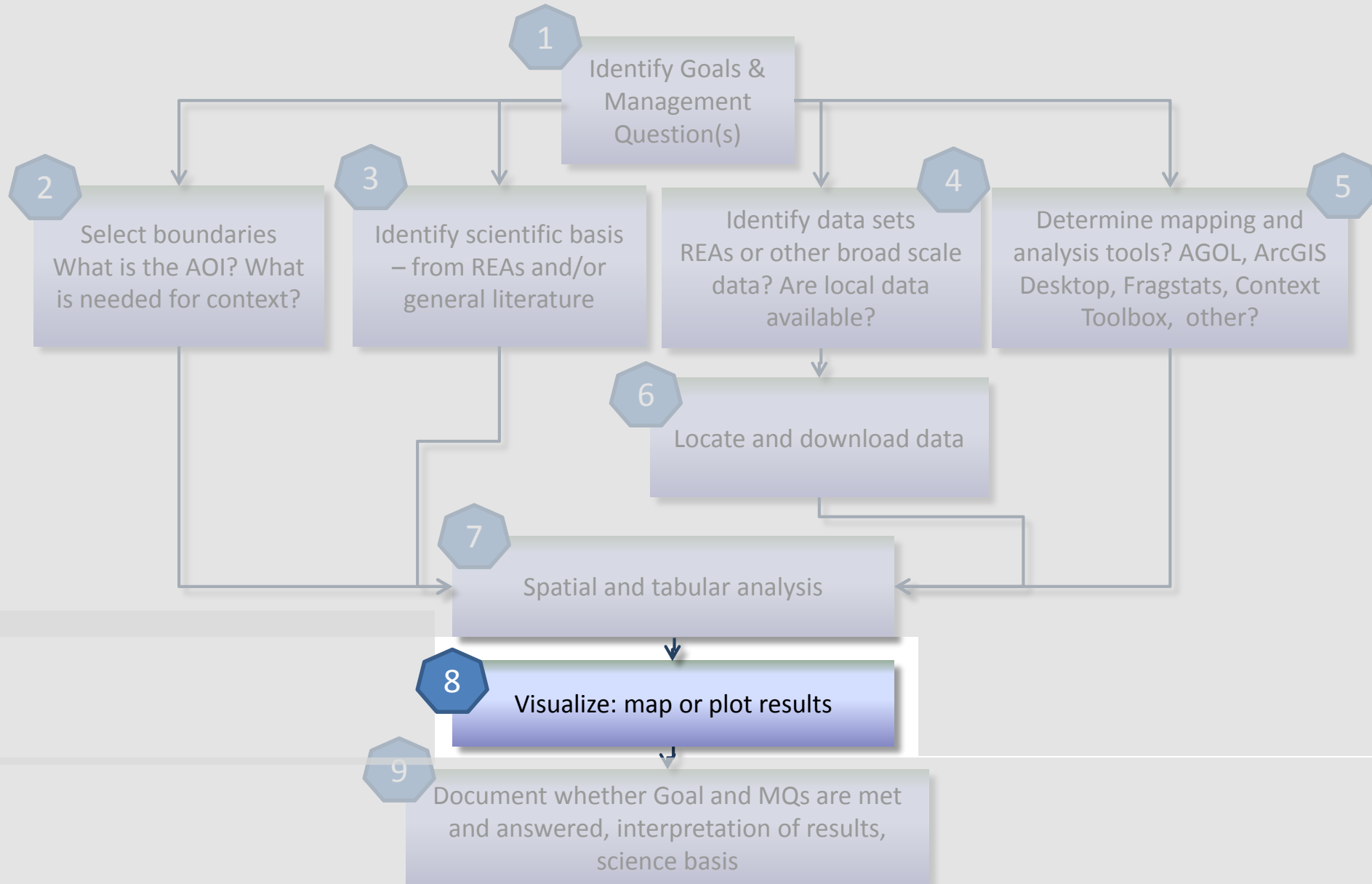


Various REA Products

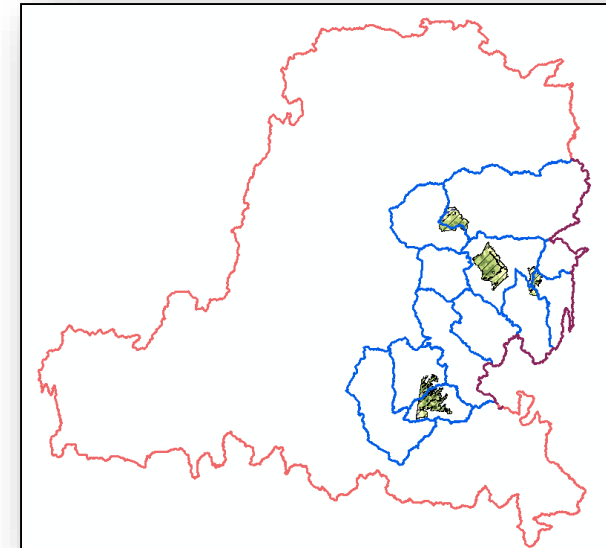
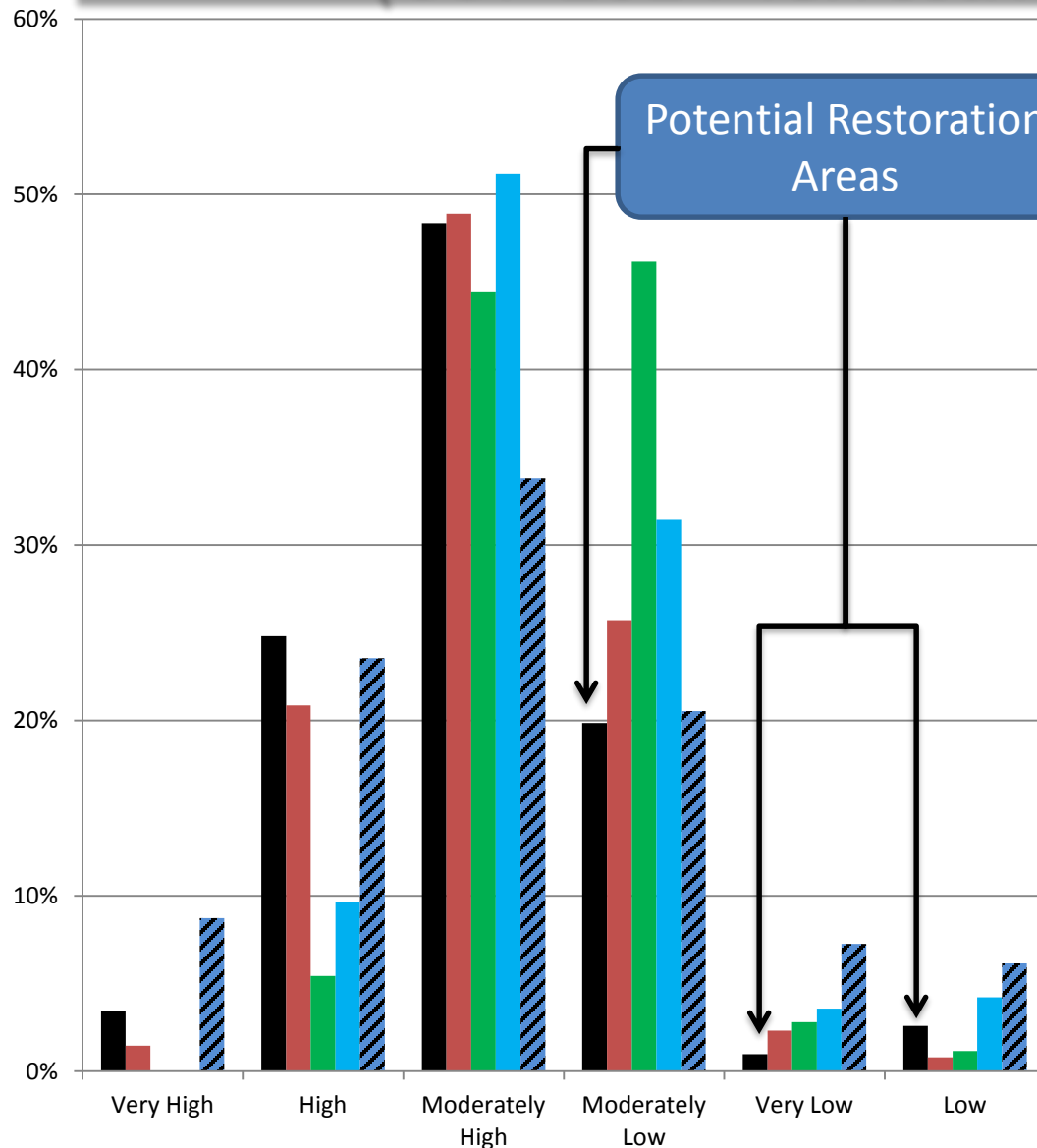
Clip &  
Summarize



# Broad Scale Analysis Road Map



# Question 1: Status of NCAs (COP 2014 Terrestrial Intactness)



■ Cyn of the Ancients NM

■ Dom./Escalante NCA

■ G.Gorge NCA

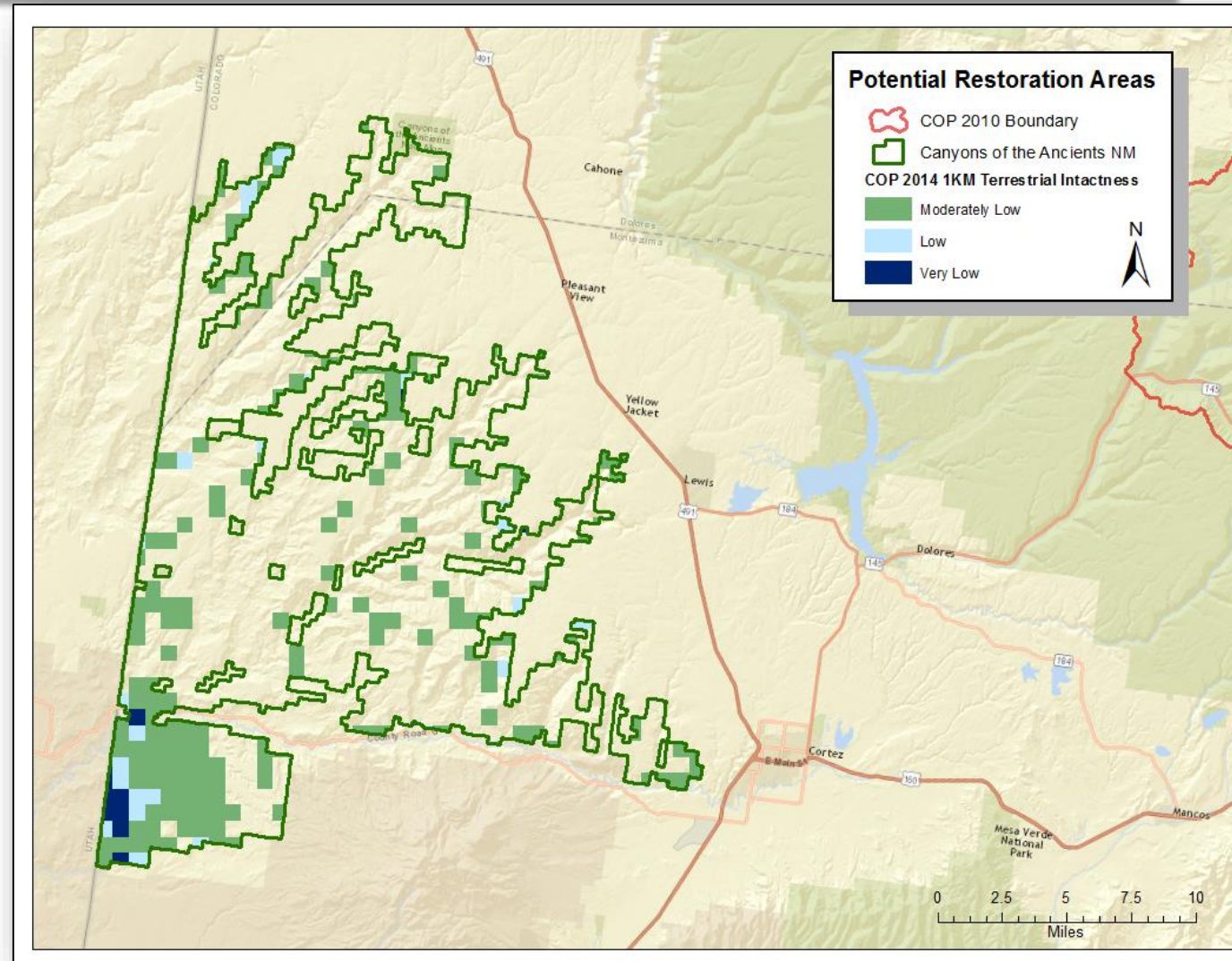
■ McInnis Canyons NCA

■ COP

# Question 1: Terrestrial Intactness

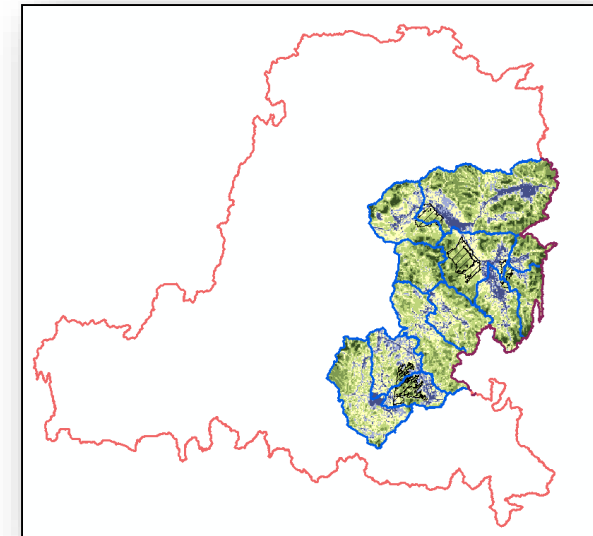
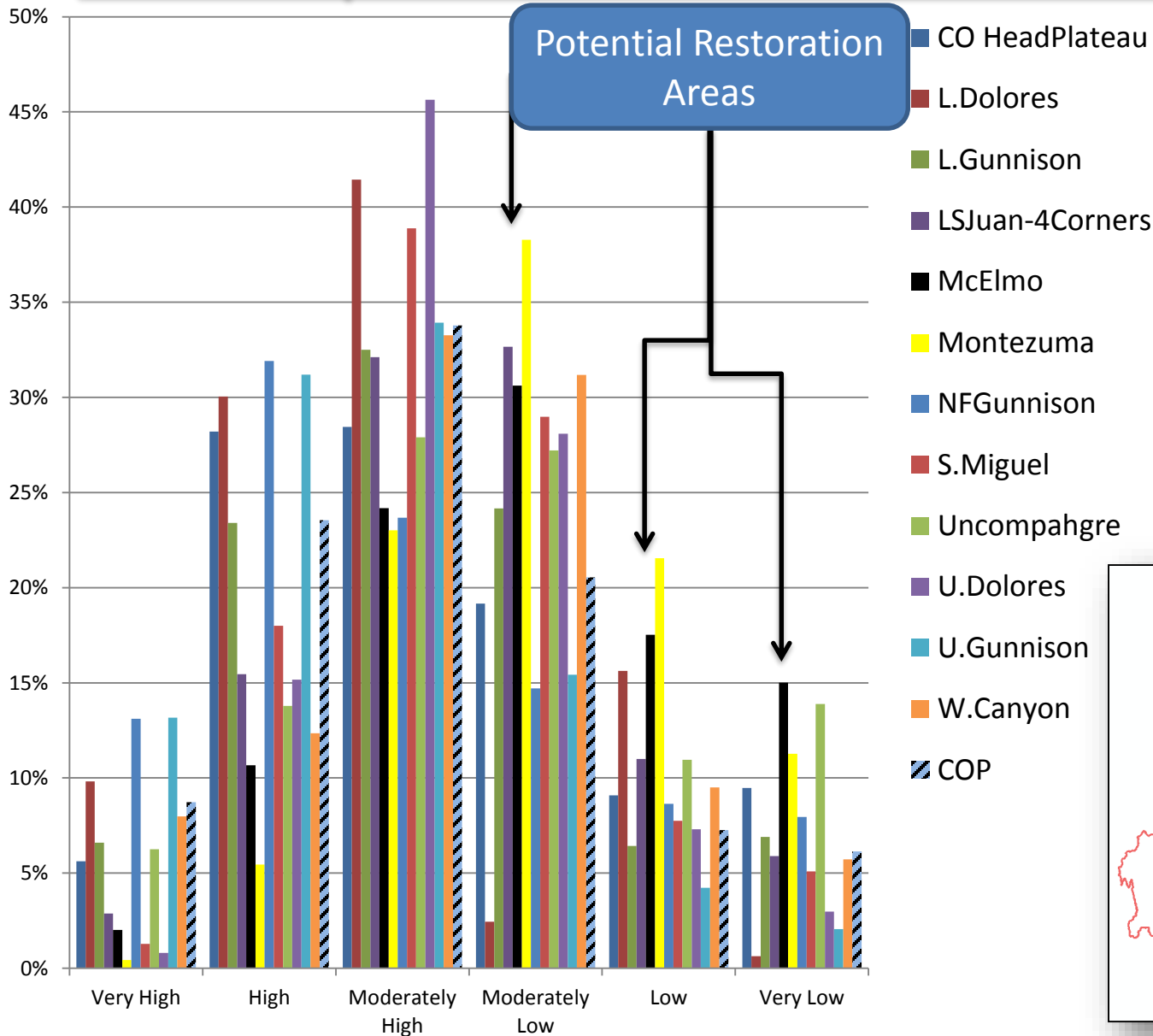
**Question 1:** Can the REA's Landscape Approach assist with identifying areas of potential **restoration** within the **NCA's** and **Canyons of the Ancients** National Monument?

**Answer:** General areas can be identified where restoration could be prioritized

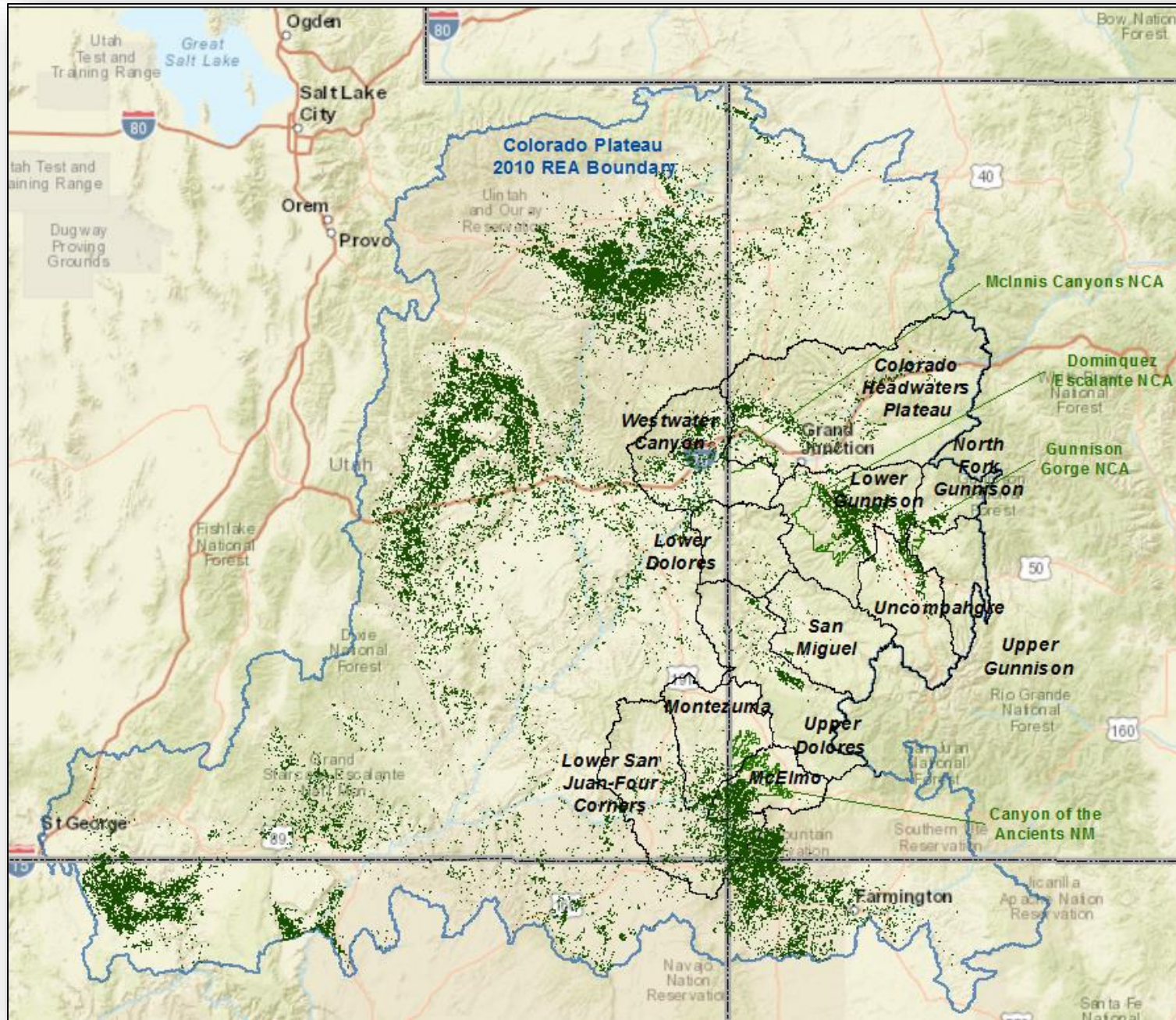


CAUTION: Don't zoom in too close!

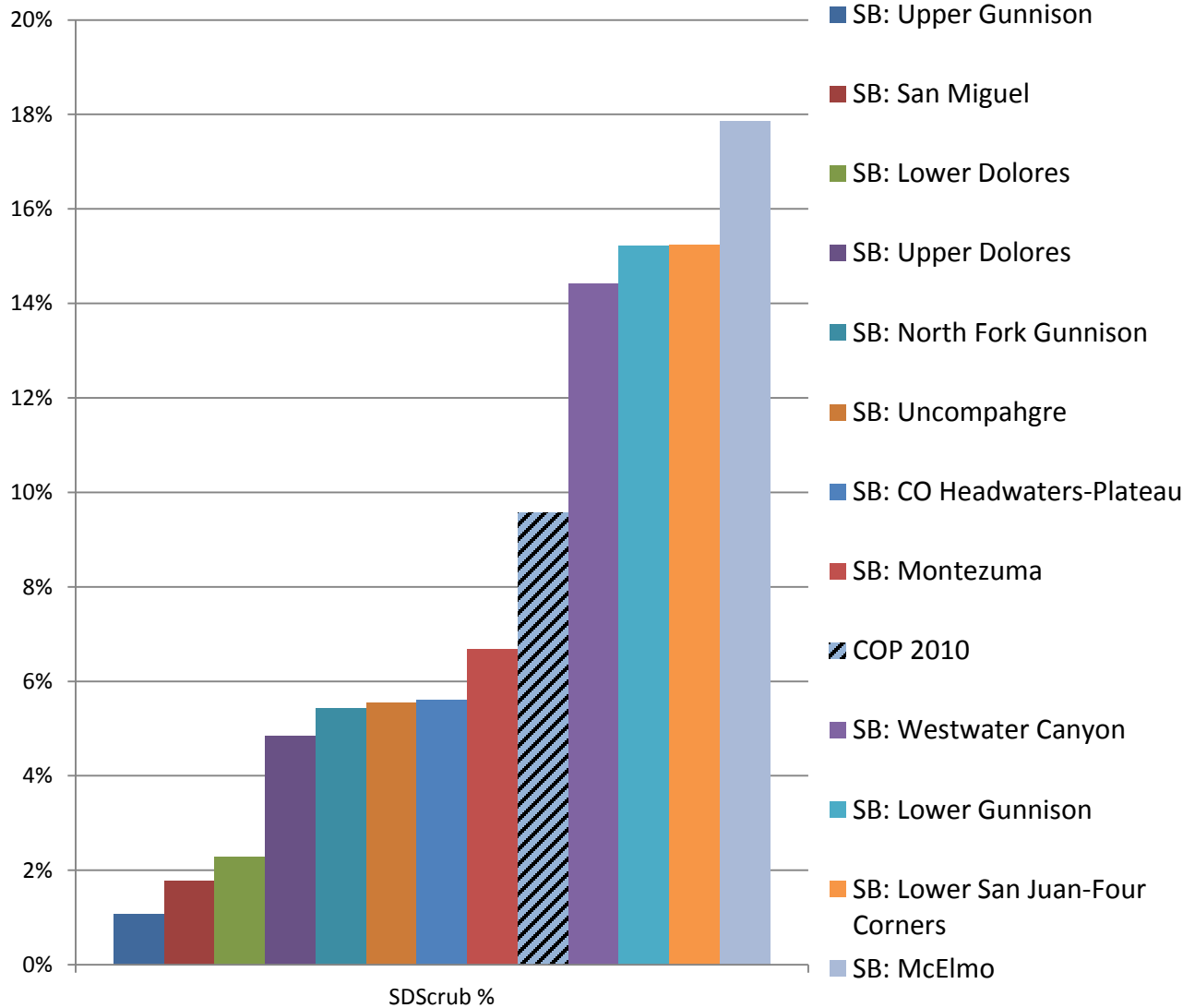
# Question 1: Status of Sub-Basins (COP 2014 Terrestrial Intactness)



# Question 2: Salt Desert Scrub Distribution



# Question 2: Salt Desert Scrub Distribution

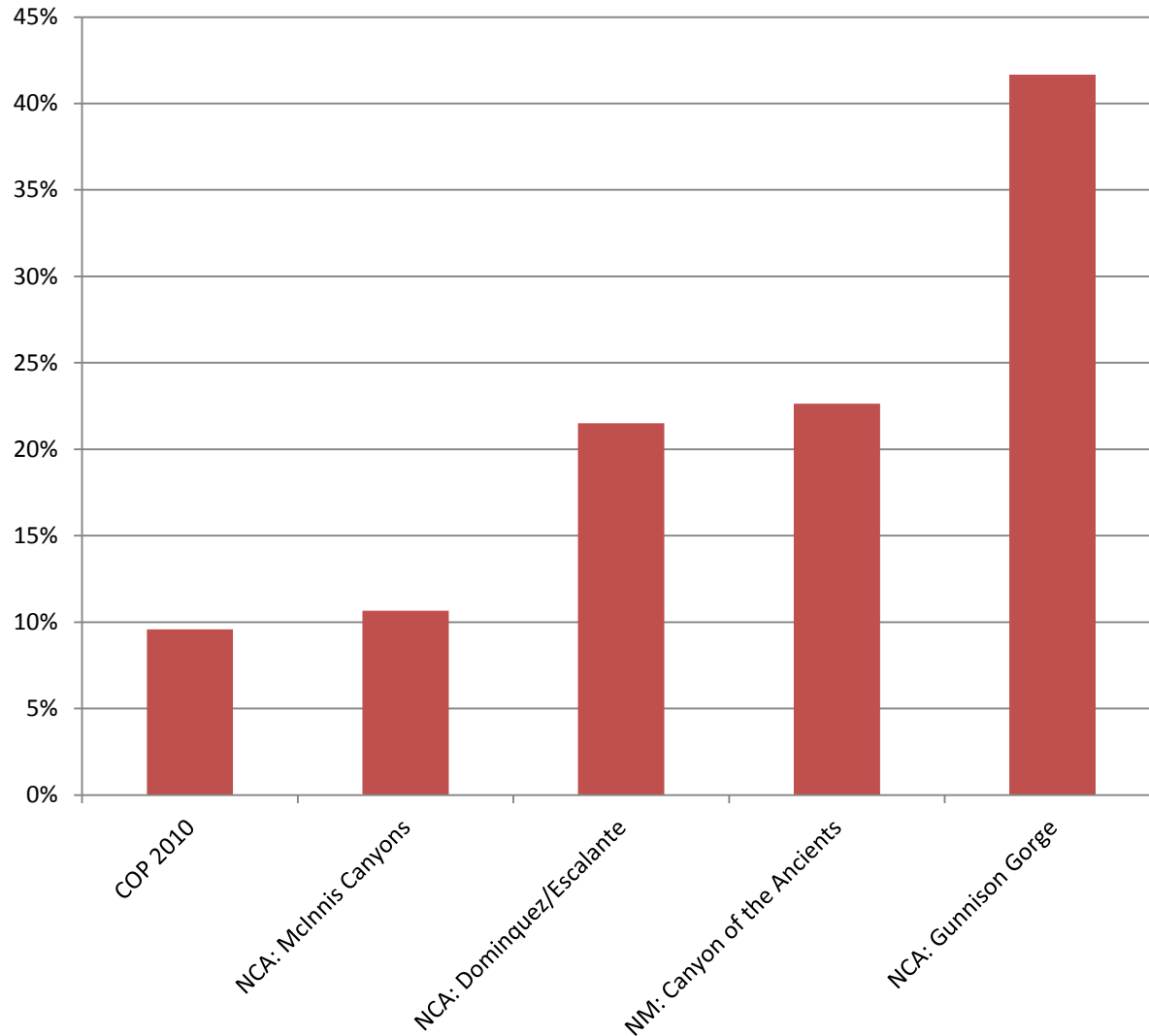


Relative Percentage by Area

## Observations:

- Salt Desert Scrub isn't evenly distributed across sub-basins in this area
- Some sub-basins have significantly greater relative percentage of SDScrub than others
- There are 4 sub-basins with significantly higher % than others
  - Westwater cyn
  - L. Gunn.
  - L. SJ-4Corners
  - McElmo

## Question 2: Salt Desert Scrub Distribution



Relative Percentage by Area

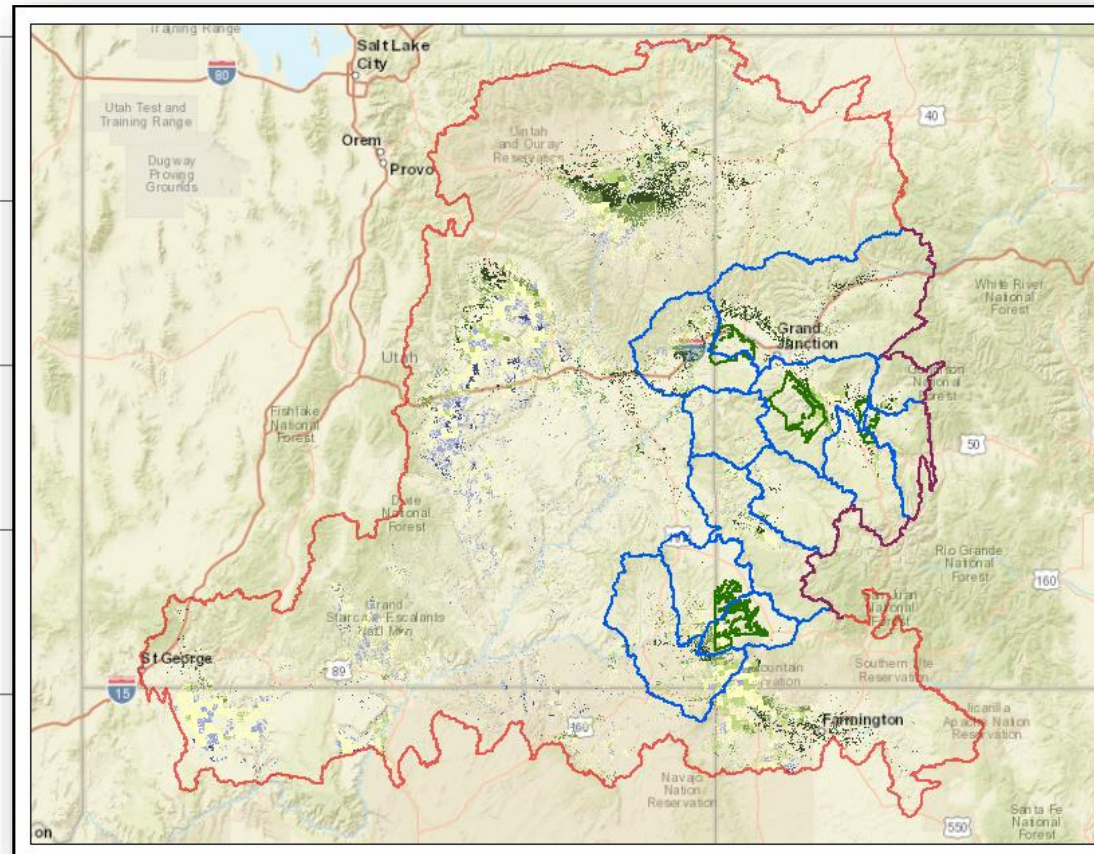
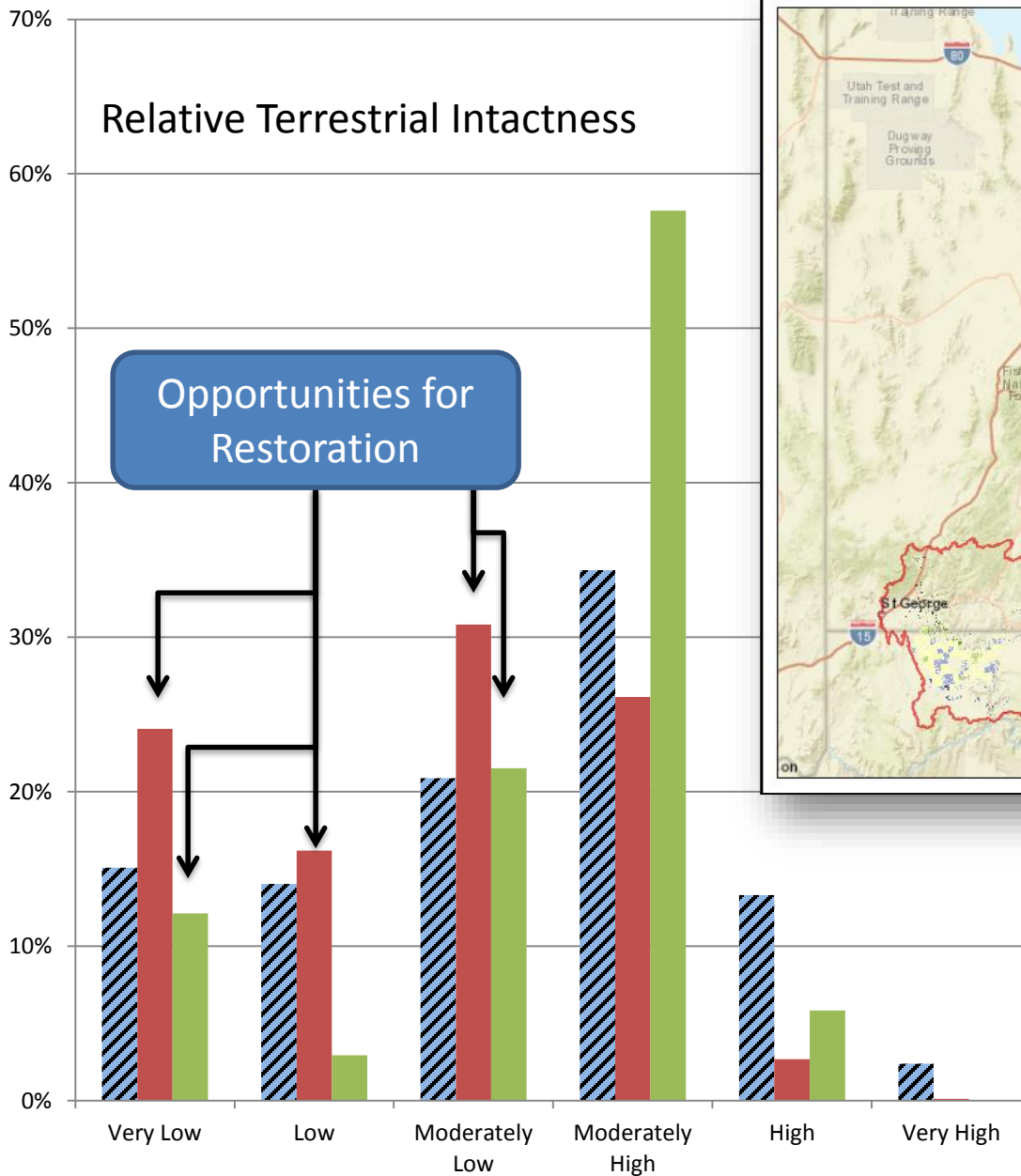
### Observations:

- The relative percentage by area ranges between 11-42%, which is generally as high or higher than for the entire ecoregion
- Gunnison Gorge has the largest relative distribution within this comparison (42%)

# Question 2: Salt Desert Scrub Status

## Relative Terrestrial Intactness

Opportunities for Restoration

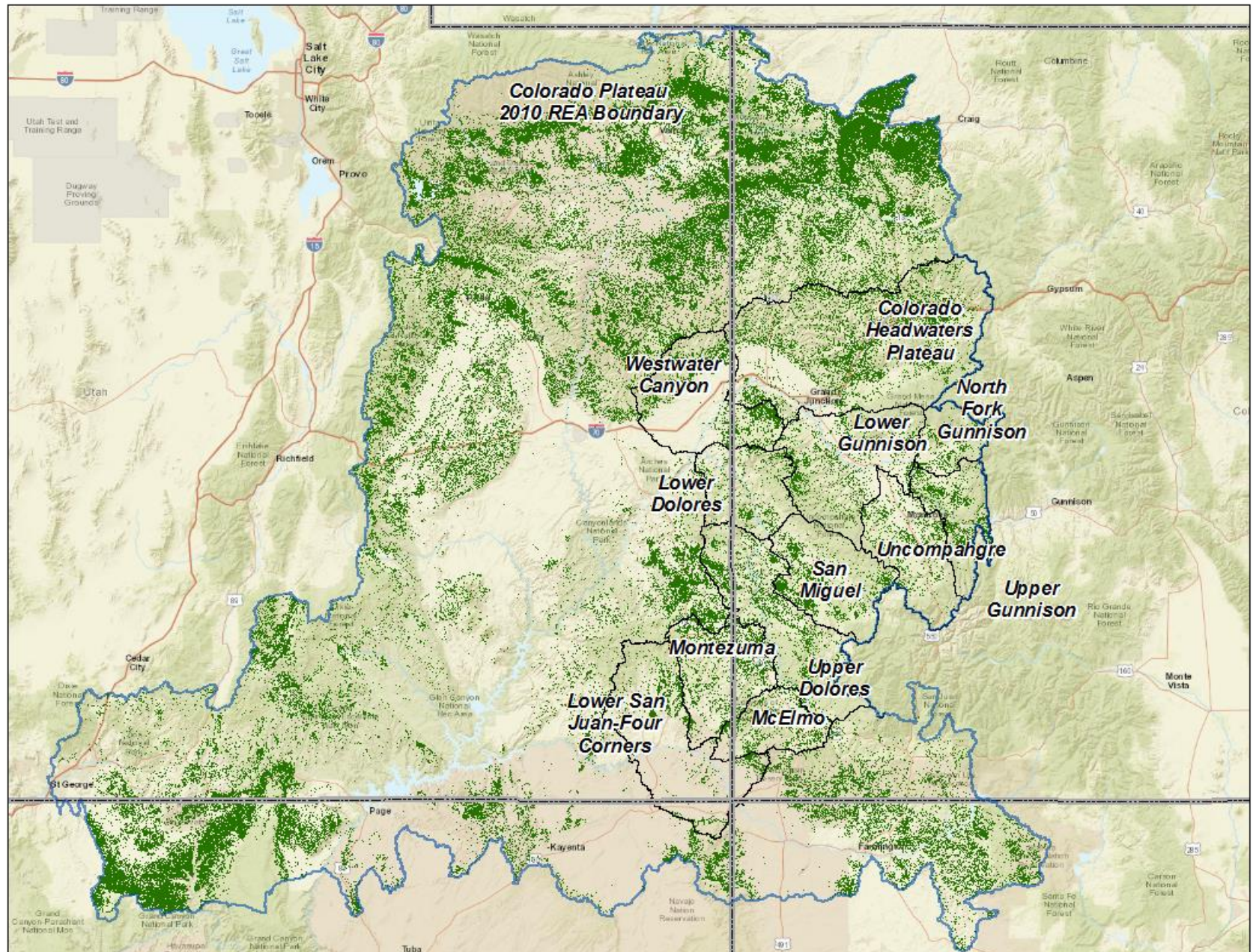


COP 2010

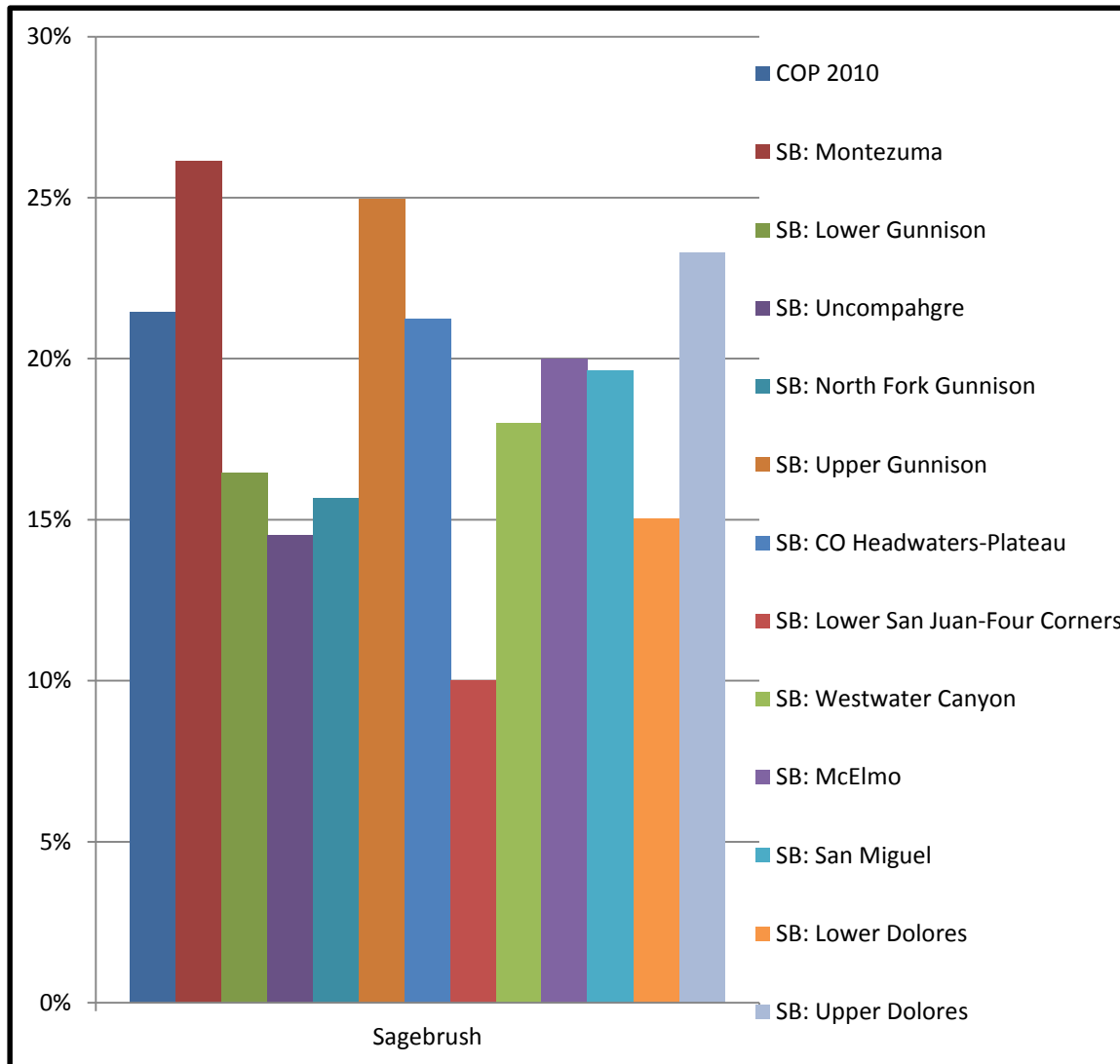
SubBasins

NCAs

# Question 2: Sagebrush Distribution



## Question 2: Sagebrush Distribution



Relative Percentage by Area

Observations:  
-Relatively uniform  
distribution ranging  
between 10-27%

Also consider interactions  
with Fine filter CE's  
(species)...

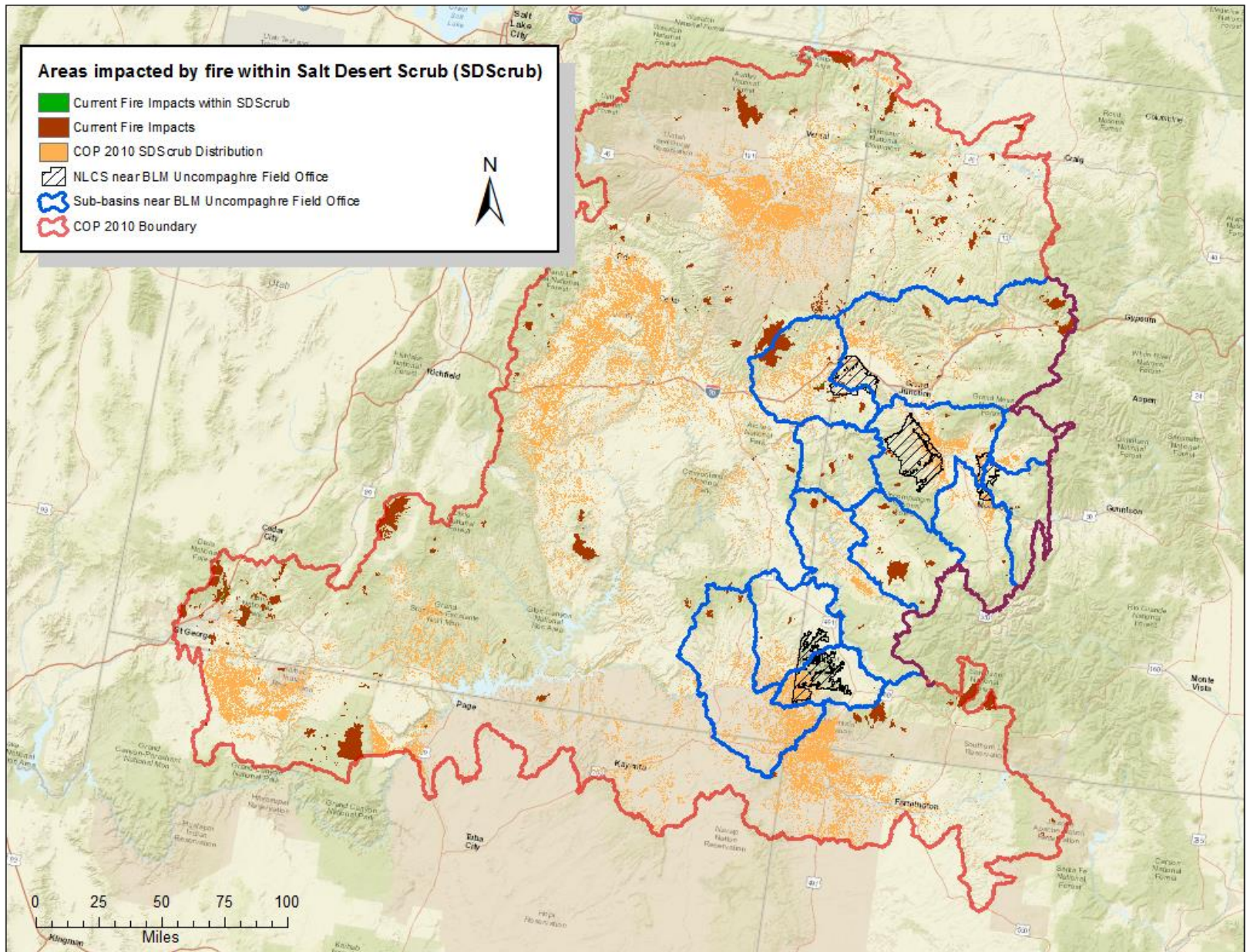
How do the file filter CE's  
impact the  
prioritization/restoration  
goals?

## Question 3: Sagebrush Status

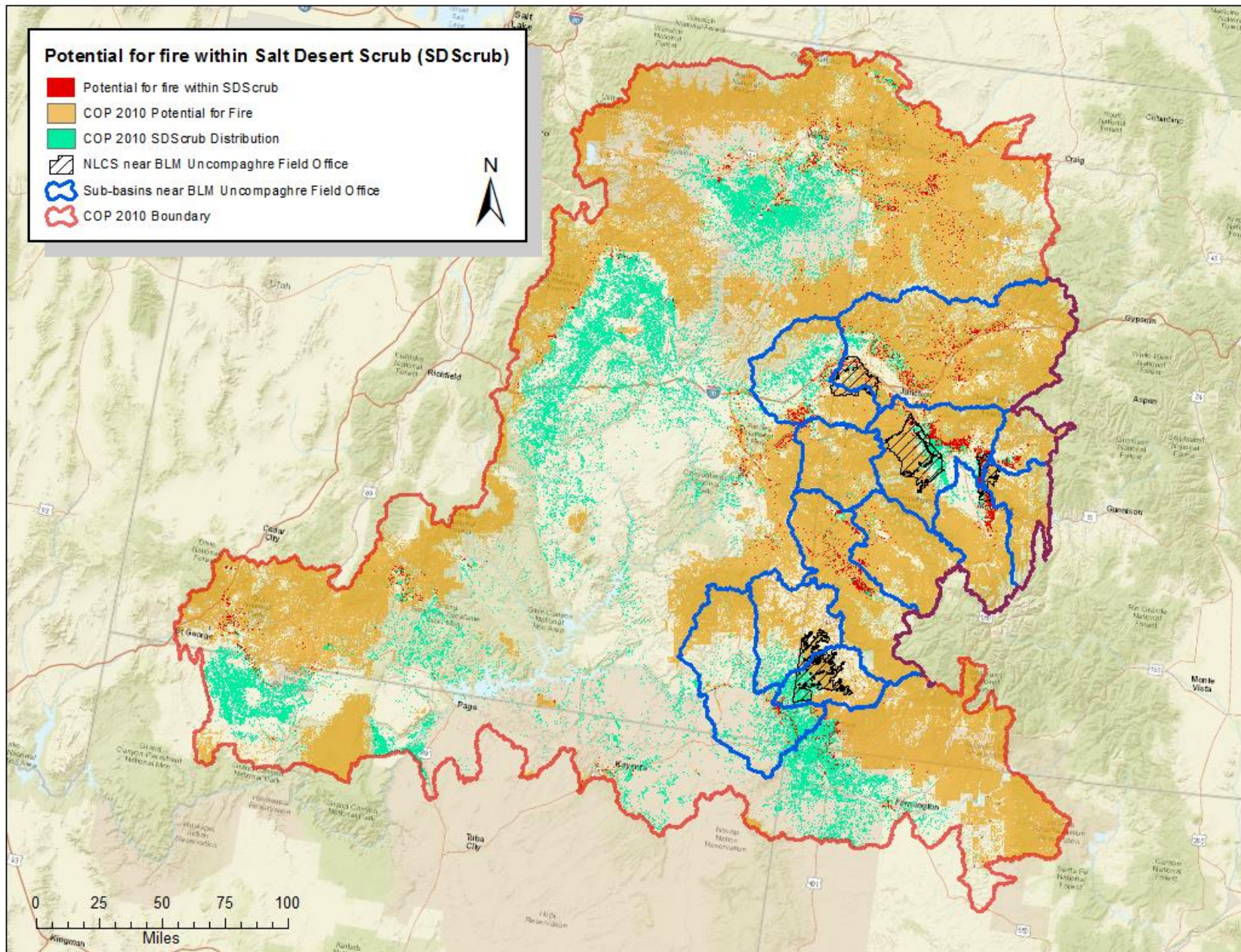


Additional Analysis  
Required here...

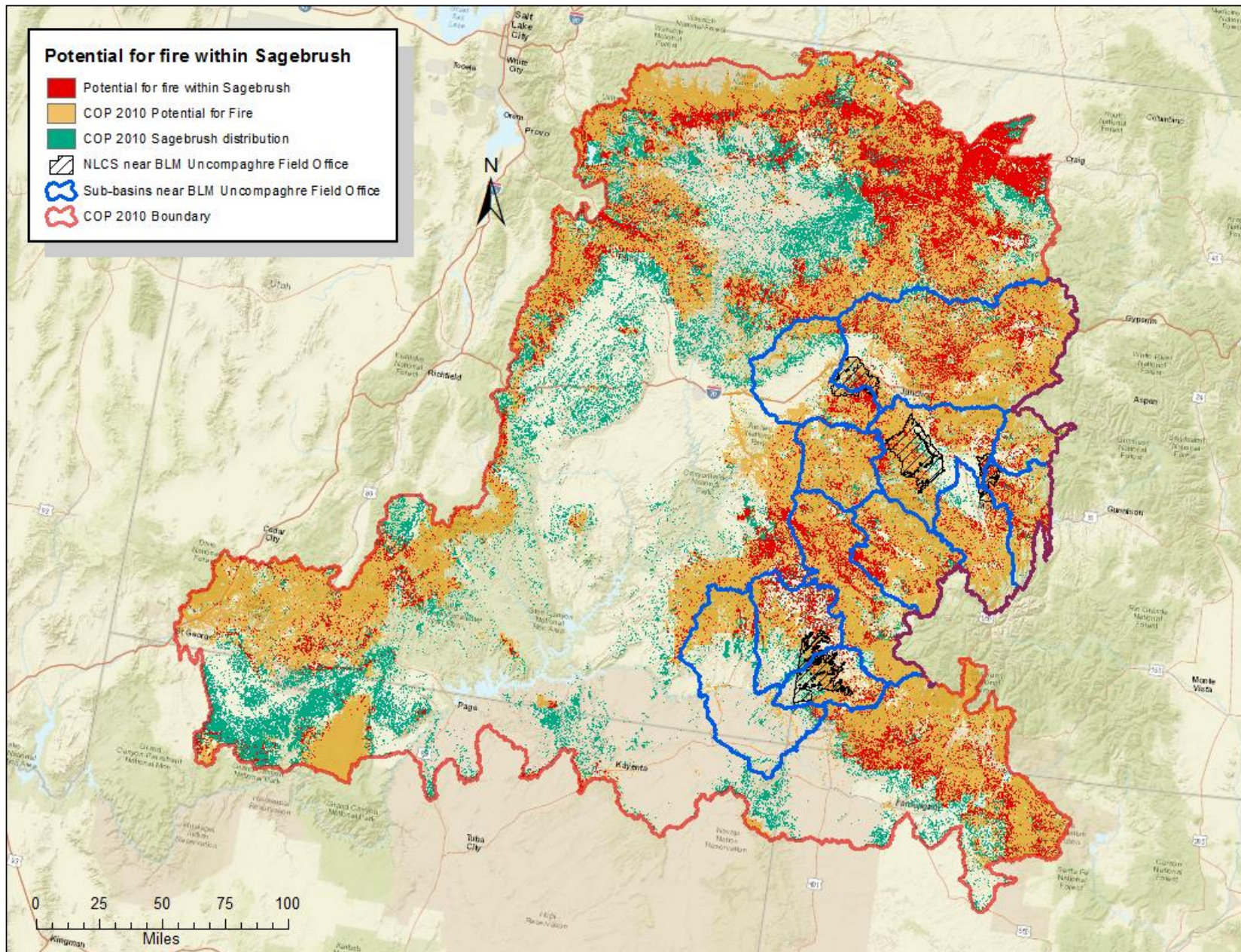
# Question 3: Salt Desert Scrub Fire Impacts



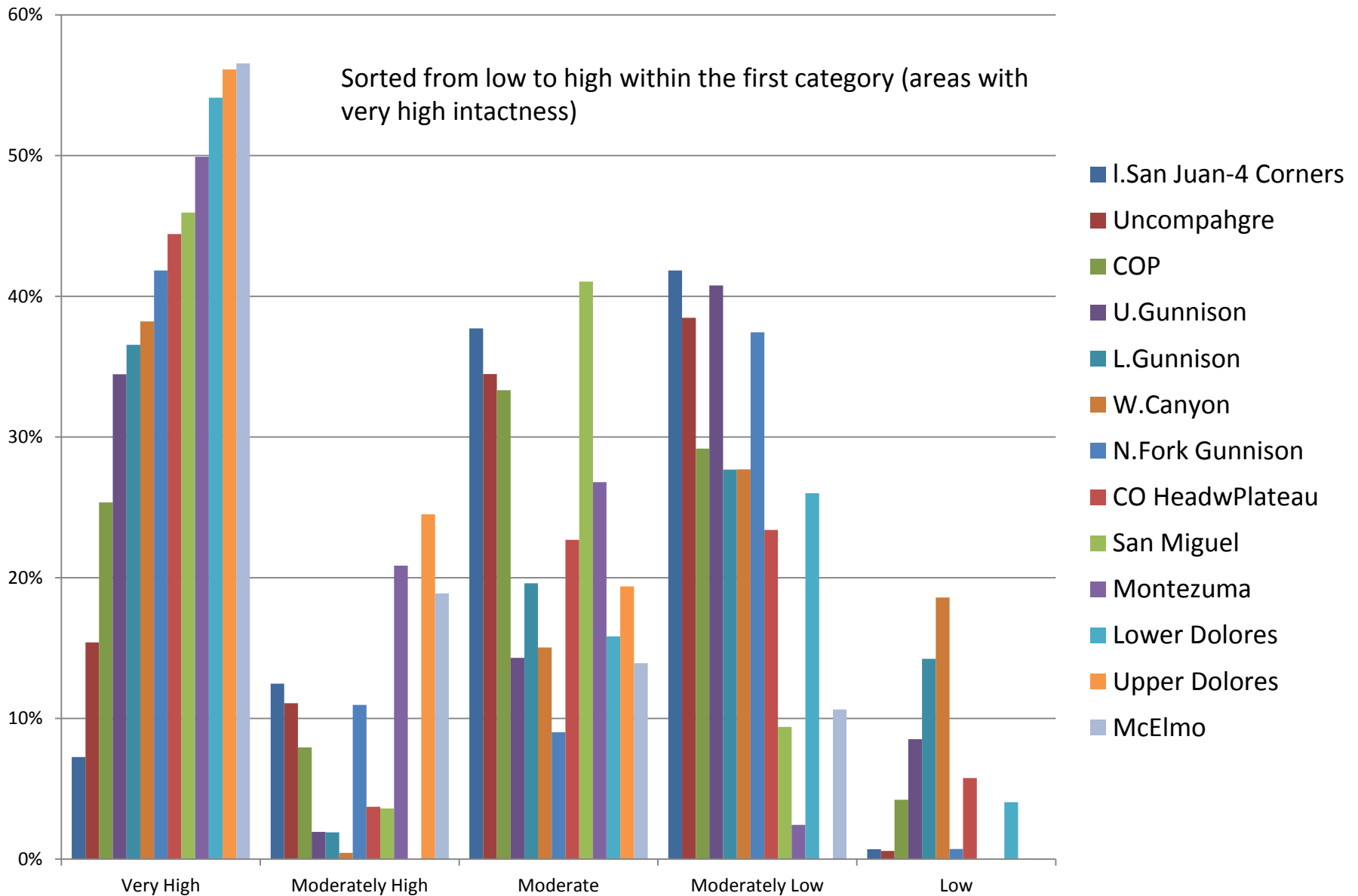
# Question 3: Salt Desert Scrub Fire Potential



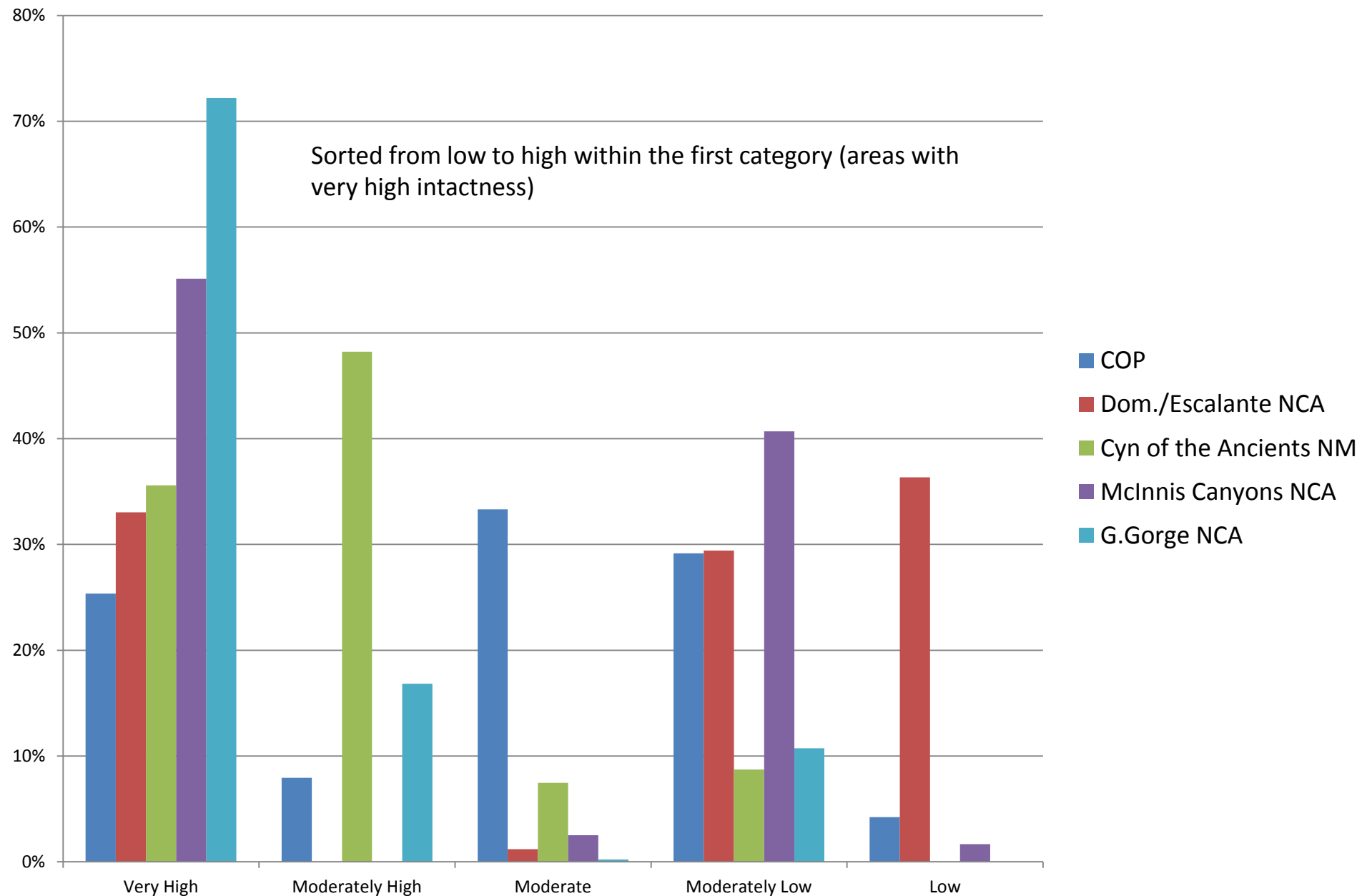
# Question 3: Sagebrush Fire Potential



# Question 4: Potential for Climate Change



## Question 4: Potential for Climate Change

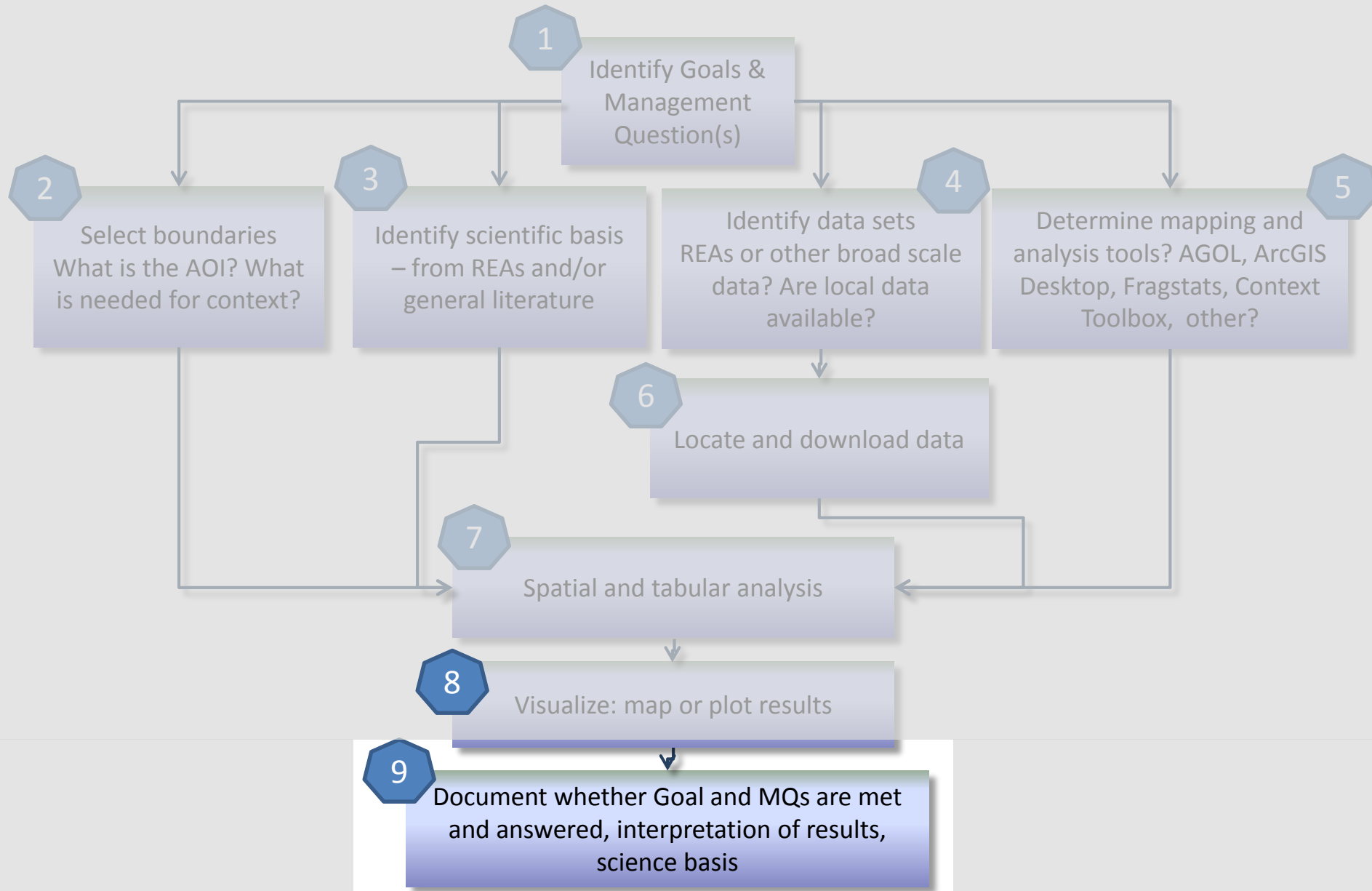


# Identify Goals & Management Question(s)

- ✓ 1. What is the status of the NCAs and how does that compare within the area/region?
- ✓ 2. Where are salt desert and sagebrush ecosystems & what is their status?
- ✓ 3. Where has salt desert or sagebrush been impacted by:
  - Fire
  - Invasives – **Hold**
  - Climate change - **Hold**
- ✓ 4. Where is salt desert or sagebrush more or less vulnerable to fire?
- ✓ 5. Where is salt desert or sagebrush more or less vulnerable to climate change?
- 6. Where are salt desert or sagebrush most and least vulnerable to both fire and climate change? – **Hold**
- 7. Do treatments or fires in vulnerable areas have poorer outcomes than in less vulnerable areas? - **Hold**
- 7. Where are intact seed banks likely to be? - **Hold**
- 8. Where are impacted seed banks likely to be? - **Hold**

Additional  
Analysis  
required here...

# Broad Scale Analysis Road Map



Document whether Goal and MQs are met and answered, interpretation of results, science basis

- Did the analysis answer the management questions sufficiently?
- Was the overall goal met?
- Keep documentation (like lab notes) of all sources, processes, thoughts along the way. Remember to note if the process changed, dead end, not useful

# Questions?



**CAPTAIN  
ANSWER**

