

# Workshop 3: BLM Solar Regional Mitigation Planning – Dry Lake SEZ Pilot Project

January 30-31, 2013; 8 am - 4:30 pm Pacific Standard Time

Participant Dial-In: 1-877-685-5350; Passcode: 830546

## Call-In Instructions:

- ***Please mute phone and computer when you are not speaking***
- ***Group discussion and Q&A periods will be included after presentations & panels***
- ***If you have a question, please click on “Raise Hand” under the Set Status icon (on status bar at top of web page)***
- ***You will be called on to state your name, organization, question. When you have finished speaking, please lower your hand and re-mute your phone***

# Introductions

- **BLM**
- **Argonne**
- **Pilot Project Participants (Stakeholders)**

# Workshop Objectives – Joe Vieira, BLM

## *BLM – Stakeholder Discussion: Dry Lake SEZ Pilot – Regional Mitigation Planning Framework*

Review regional mitigation methods, tools, and Dry Lake SEZ pilot outcome for:

1. Establishing regional trends and unavoidable impacts that warrant off-site mitigation;
2. Identifying criteria and best practices for defining regional mitigation objectives
3. Identifying and prioritizing mitigation projects & locations
4. Identifying mitigation valuation & costing options; and
5. Using solar monitoring and adaptive management to evaluate mitigation effectiveness

# Workshop Overview

## Day One:

- *Duration*
  - *8 am-4:30pm*
- *Topics:*
  - *Regional Conditions & Trends*
  - *Unavoidable Impacts that Warrant Offsite Mitigation*
  - *Regional Mitigation Objectives*
- *Format:*
  - *Presentations*
  - *Breakout Groups*
  - *Panel Presentations*
  - *Panel – Group Discussion*

# Workshop Overview

## Day Two:

- *Duration*
  - *8 am-4:30pm*
- *Topics:*
  - *Regional Mitigation Priorities Locations*
  - *Methods for Mitigation Valuation & Costing*
  - *Long-term Monitoring to Evaluate Mitigation Effectiveness*
- *Format:*
  - *Presentations*
  - *Panel Presentations*
  - *Panel – Group Discussion*

# AGENDA (Times are Pacific Standard Time)

**Wednesday January 30, 2013**

- 7:30-8:00 Registration
- 8:00-8:30 Workshop Overview and Review – Webcast 1 & 2 (Joe Vieira, BLM; Karen Smith, Argonne)
- 8:30-9:30 BLM Evaluation of Regional Trends & Conditions (Gordon Toevs & Sandra Brewer, BLM)
- 9:30-10:30 BLM Evaluation and Determination of Impacts that Warrant Off-site Mitigation (Mike Dwyer, BLM)

# AGENDA (Times are Pacific Standard Time)

**Wednesday January 30, 2013**

- 10:30-10:45      Break
- 10:45-11:45      Breakout Group Discussion on Regional Trends & Unavoidable Impacts that Warrant Off-Site Mitigation
- 11:45-1:00      Lunch
- 1:00-1:45      Report from Breakout Sessions on Regional Trends & Unavoidable Impacts that Warrant Off-Site Mitigation

# AGENDA (Times are Pacific Standard Time)

**Wednesday January 30, 2013**

- 1:45-2:45 Panel 1: Establishing Regional Mitigation Objectives (BLM Southern Nevada District – Fred Edwards; Nevada Department of Wildlife – Brad Hardenbrook; US Fish and Wildlife Service – Brian Novosak; The Wilderness Society – Alex Daue)
- 2:45-3:00 Break
- 3:00-4:00 Group Discussion on Establishing Regional Mitigation Objectives (Facilitator: Karen Smith, Argonne)
- 4:00-4:30 Summary and Wrap-Up (Joe Vieira, BM)

# AGENDA (Times are Pacific Standard Time)

**Thursday January 31, 2013**

- 8:00-8:15 Summary of Day 1 & Overview for Day 2 (Karen Smith, Argonne)
- 8:15-9:00 Map-Based Discussion on Regional Hotspots and Potential Locations for Mitigation (Lee Walston, Argonne)
- 9:00-10:30 Panel 2: Methods for Identifying & Prioritizing Mitigation Projects and Locations – (Nevada Department of Wildlife – Brad Hardenbrook; BLM California – Mike Sintetos; Clark County – Marci Henson; Lincoln County – Mike Baughman; Conservation Planner John Tull; The Nature Conservancy – Jim Moore)

# AGENDA (Times are Pacific Standard Time)

**Thursday January 31, 2013**

- 10:30-10:45      Break
- 10:45-11:30      Group Discussion on Priority Setting & Methods for Identifying Mitigation Projects and Locations (Facilitator: Karen Smith, Argonne)
- 11:30-1:00      Lunch
- 1:00-1:30      Introduction to BLM Method and Tool Options for Mitigation Costing (Dave Murphy, Argonne)

# AGENDA (Times are Pacific Standard Time)

Thursday January 31, 2013

- 1:30-2:15 Panel 3: Criteria & Methods for Valuing Resources for SEZ Off-Site Mitigation (Clark County-John Tennert; NRG Solar – Donna McClay; The Nature Conservancy – Joe Fargione)
- 2:15-2:30 Break
- 2:30-3:30 Group Discussion on Options for Mitigation Costing (Facilitator: Karen Smith, Argonne)
- 3:30-4:15 Use of Long-Term Monitoring to Evaluate Mitigation Effectiveness (Gordon Toevs, BLM)

# AGENDA (Times are Pacific Standard Time)

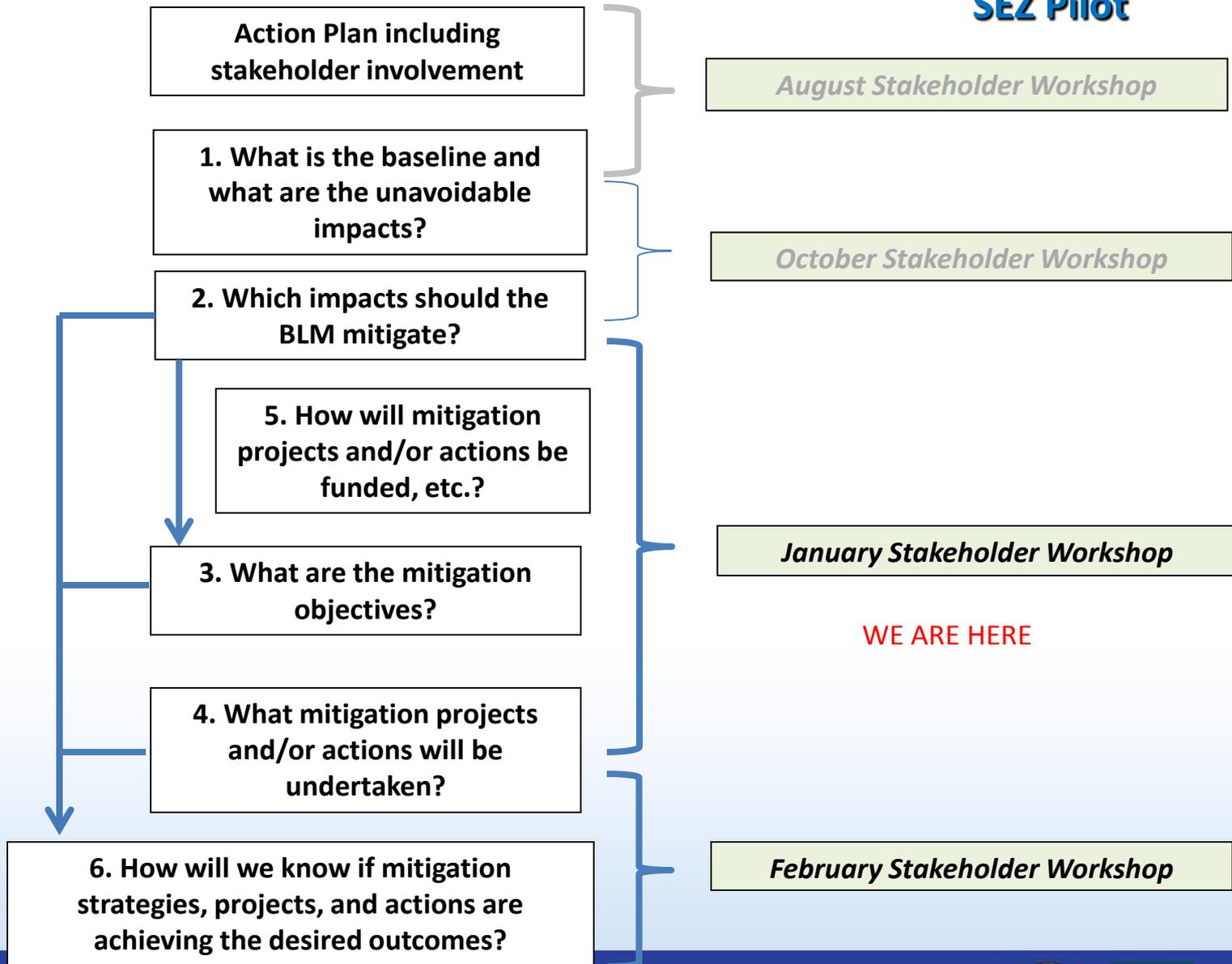
**Thursday January 31, 2013**

- 4:15-4:30 Where do we go from Here and Wrap-Up (Joe Vieira, BLM)

# Where are we in the Regional Mitigation Planning Process?



# Action Plan: Dry Lake SEZ Pilot



# Regional Conditions and Trends

## Solar Regional Mitigation Pilot Project

**Gordon Toevs**

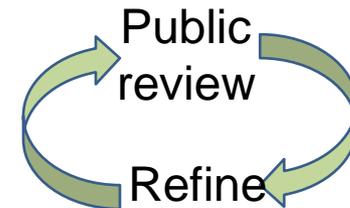
**Sandra Brewer**

# Purpose

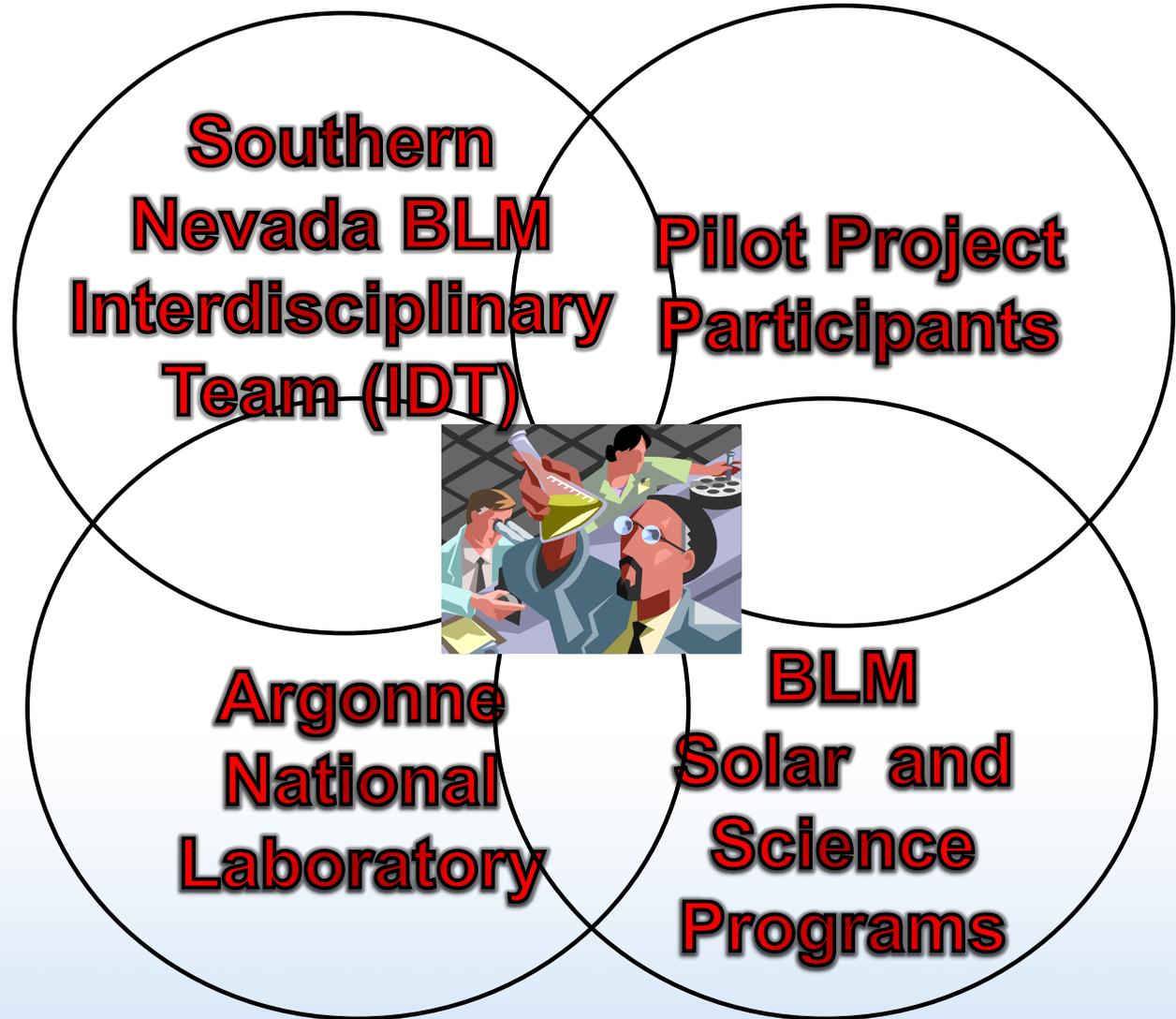
- Create a regional context for helping to decide which of the unavoidable impacts of developing the Dry Lake SEZ in southern Nevada warrant off-site mitigation
- Develop a process to complete this step for all the remaining SEZs

# Methodology for Identifying the Impacts of Solar Development that Warrant Off-site Mitigation

1. Refine avoidance areas
2. Adopt a conceptual model
3. Identify at-risk resources and processes in the region
4. Estimate how the unavoidable impacts of solar development will affect the status and trend of the at-risk resource values.
5. Identify decision criteria
6. Apply the criteria to identify which unavoidable impacts warrant off-site mitigation.



# Who?



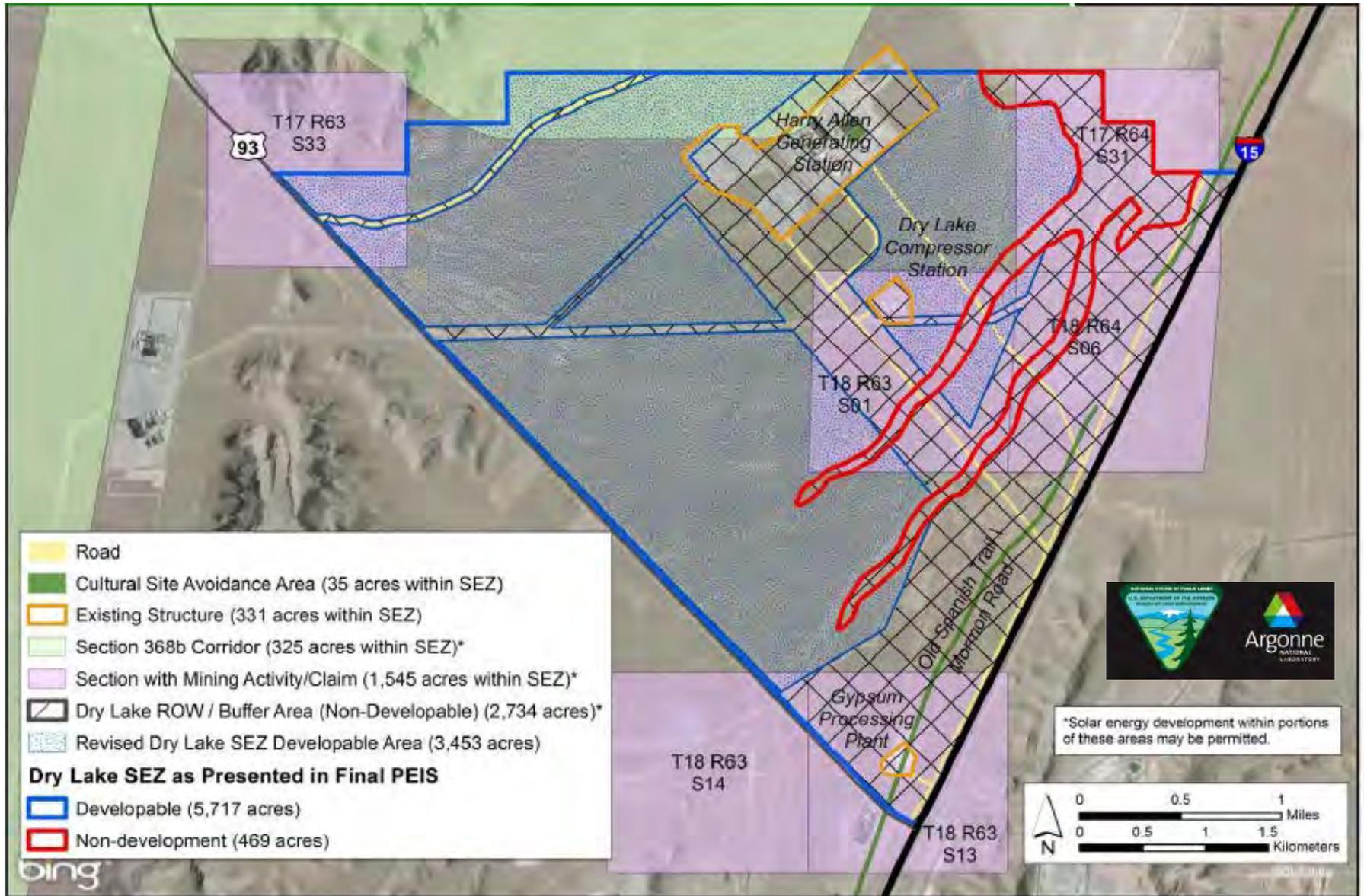
# 1. Refine Avoidance Areas

Refine avoidance areas and redefine the type, acreage and/or quantity of the unavoidable impacts accordingly based on:

- mining claims
- existing right-of-way grants
- any other potential land-use conflicts with any resource value that might be avoided by restricting development within the SEZ.

**IDT**

# Refined Map for Dry Lake



## 2. Conceptual Model

- Adopt a conceptual model
  - Illustrate relevant relationships of the resources, processes, and functions and their role in ecological, social, and cultural systems
  - Provides the context to identify critical resources
  - Provides information on critical process to monitor

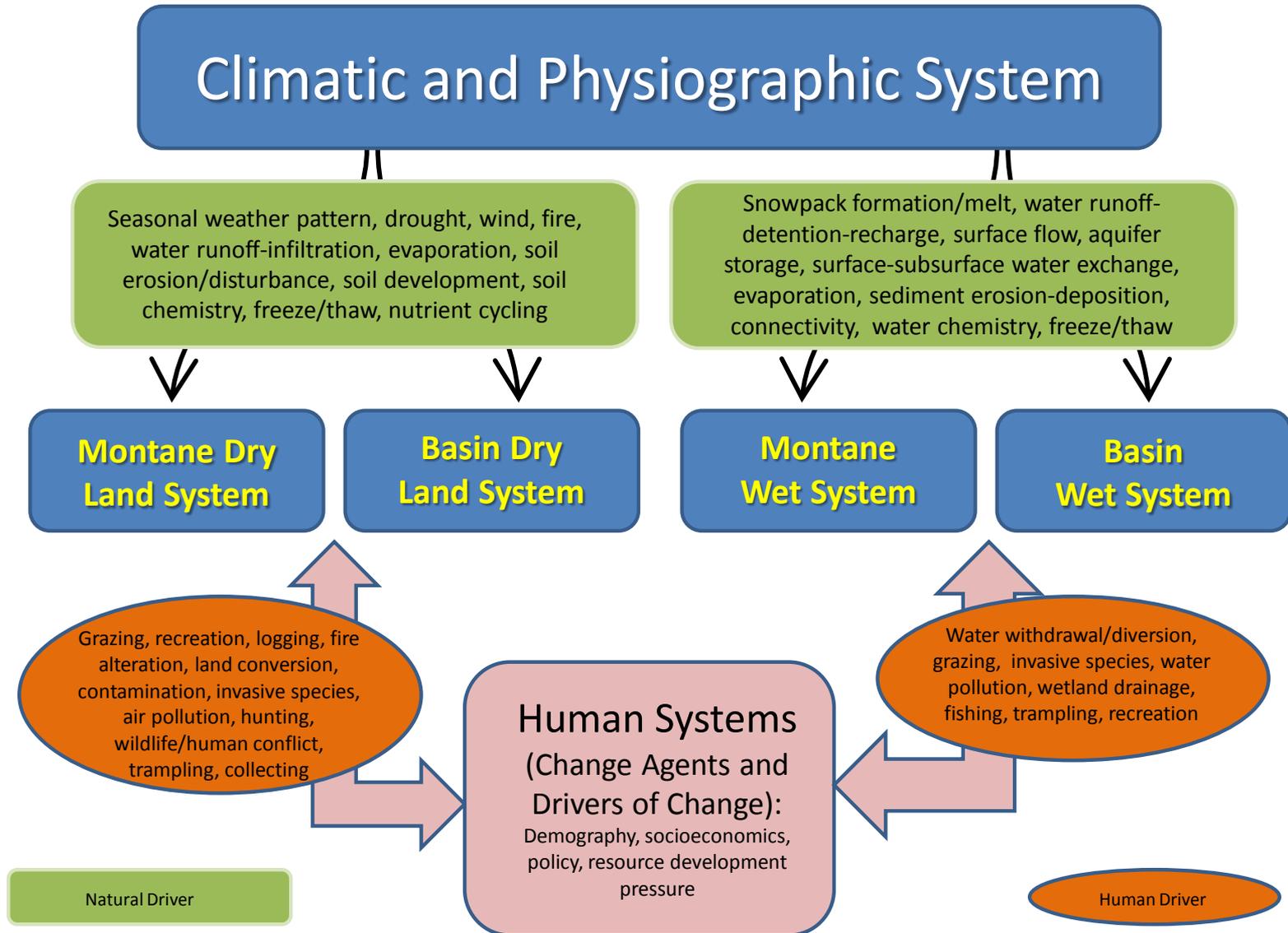
# Conceptual Models / Ecosystem Services

***Sandra K Brewer, PhD  
Bureau of Land Management  
Nevada State Office***

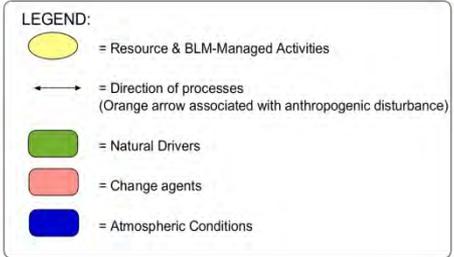
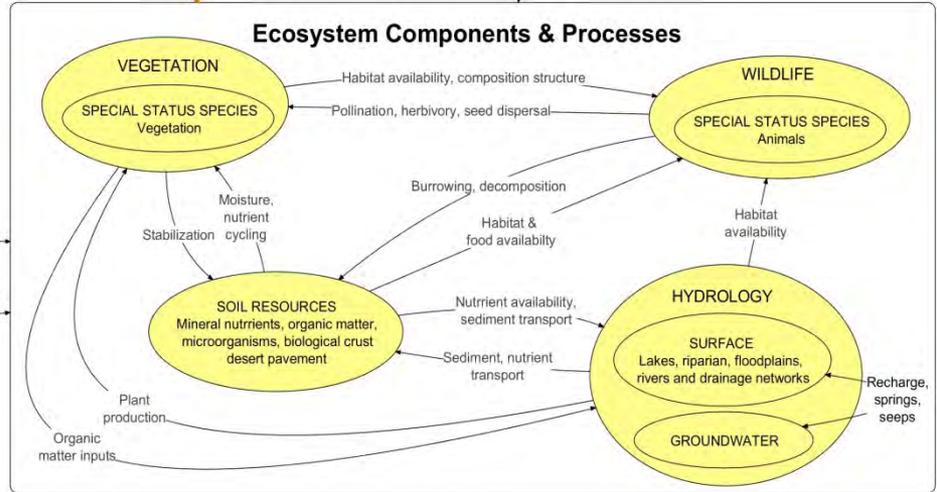
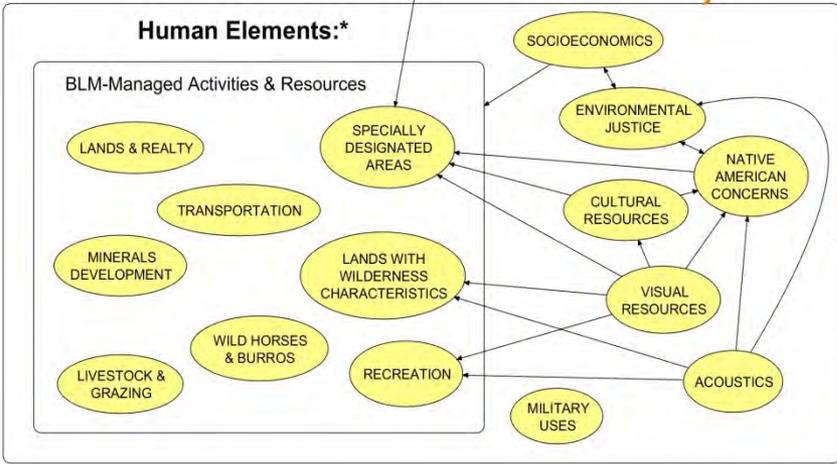
# Overview

- Conceptual model developed for Mojave
- Ecosystem Services
  - What are they?
  - Mojave specific
- Surrogate Approach
  - Mitigation
  - Monitoring

# Tier 1 Conceptual Model: Mojave Ecoregion Model



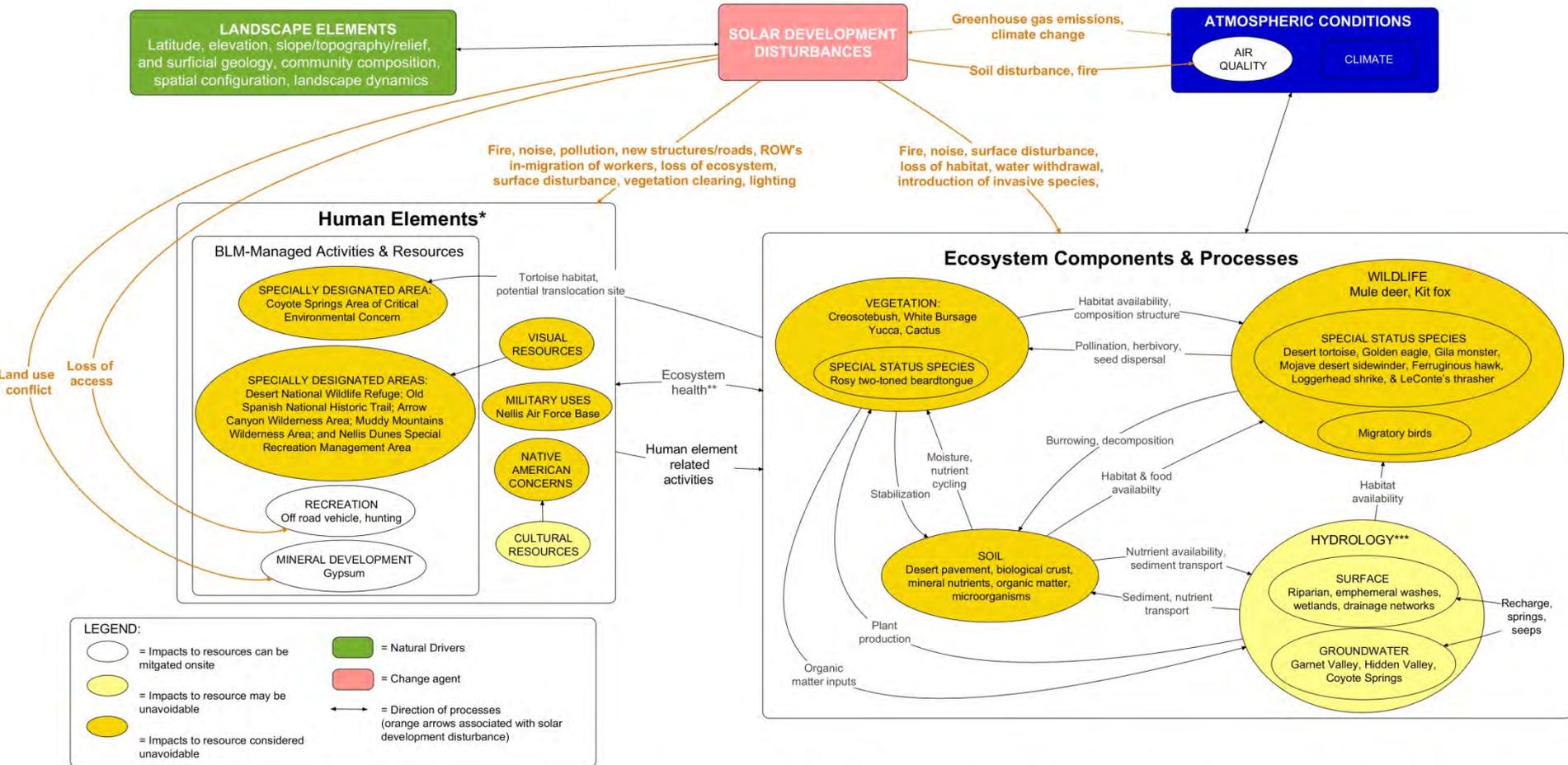
# Tier 2 Conceptual Model Resource-Based Model



\* Human Elements includes the human concerns and related resources for which impact evaluation was included in the Solar PEIS. These are activities and resources with (or requiring) human engagement in one of the following ways: 1) requires active participation in management of a resource or activity (e.g., lands and realty, specially designated areas, transportation, grazing, mineral development, recreation, military uses); 2) addresses the perspective or perception of a resource (e.g., visual resources, acoustics, lands with wilderness characteristics, cultural); and/or 3) addresses human-specific values (e.g., cultural resources, Native American concerns, socioeconomics, environmental justice).

\*\*Ecosystem health is referred to as the degree to which the integrity of the soil and the ecological processes of the ecosystem are sustained (BLM Handbook H-4180-1). Ecosystem health can influence Native American concerns, visual resources, specially designated areas, and recreation. Human elements can also influence ecosystem components (e.g., recreation can compact soils, hunting can impact species, etc.).

# Tier 3 Conceptual Model Dry Lake SEZ Solar Development Model



\* Human Elements includes the human concerns and related resources for which impact evaluation was included in the Solar PEIS. These are activities and resources with (or requiring) human engagement in one of the following ways: 1) requires active participation in management of a resource or activity (e.g., lands and reality, specially designated areas, transportation, grazing, mineral development, recreation, military uses); 2) addresses the perspective or perception of a resource (e.g., visual resources, acoustics, lands with wilderness characteristics, cultural); and/or 3) addresses human-specific values (e.g., cultural resources, Native American concerns, socioeconomic, environmental justice).

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\*\*\*Unavoidable hydrologic impacts may occur due to changes in drainage and recharge patterns. Potential impacts to water availability will be mitigated on-site through the implementation of a net neutral use policy (water rights must be purchased).

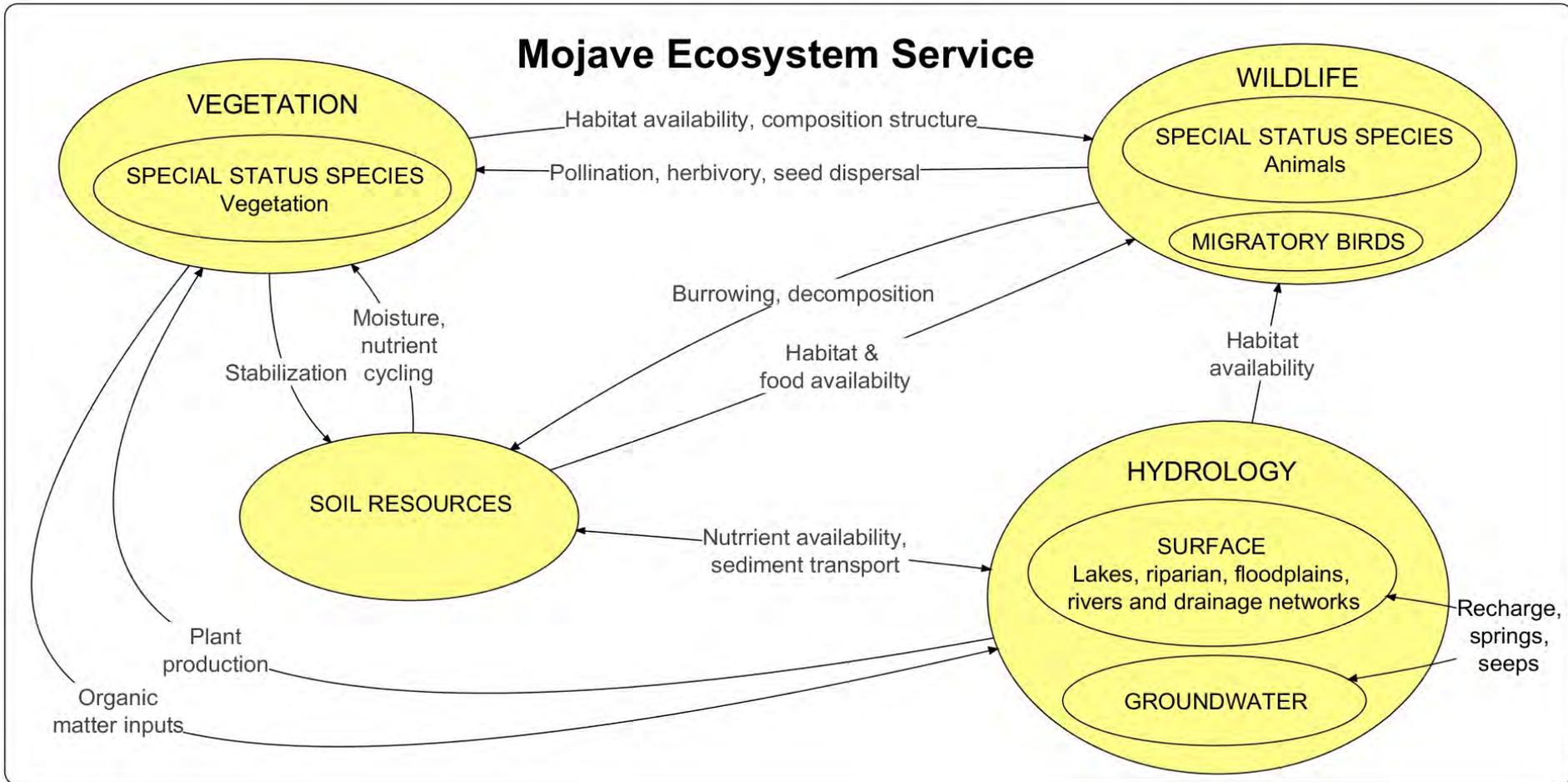
# What is an Ecosystem Service

- Benefits people obtain from ecosystems
- Provisioning services
  - food, water, quality air,
- Regulating services
  - Flood, drought regulation; climate
- Cultural services
  - Spiritual, recreational, cultural
- Supporting services
  - Nutrient cycling

Millennium Ecosystem Assessment 2005

<http://www.millenniumassessment.org/en/Index-2.html>

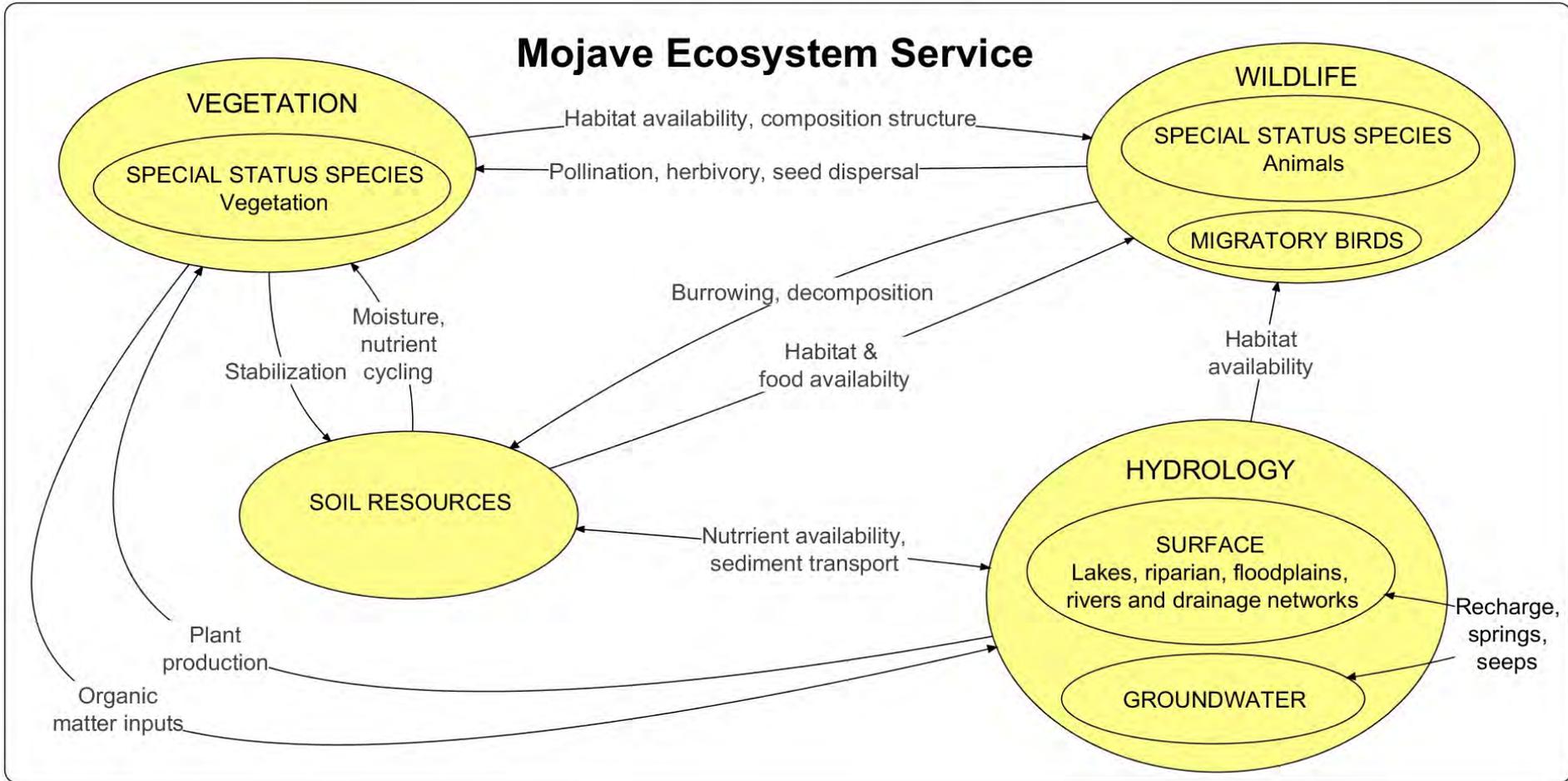
# Mojave Ecosystem Service



# Mojave Ecosystem Service

- Provisioning services
  - Pollination, food availability
- Regulating services
  - Sediment, dust control, Flood, drought regulation; climate
- Cultural services
  - Visual resources, cultural resources, Tribal resources, recreation, SDAs
- Supporting services
  - Seed dispersal, herbivory, burrowing, decomposition, nutrient transport

# Monitoring

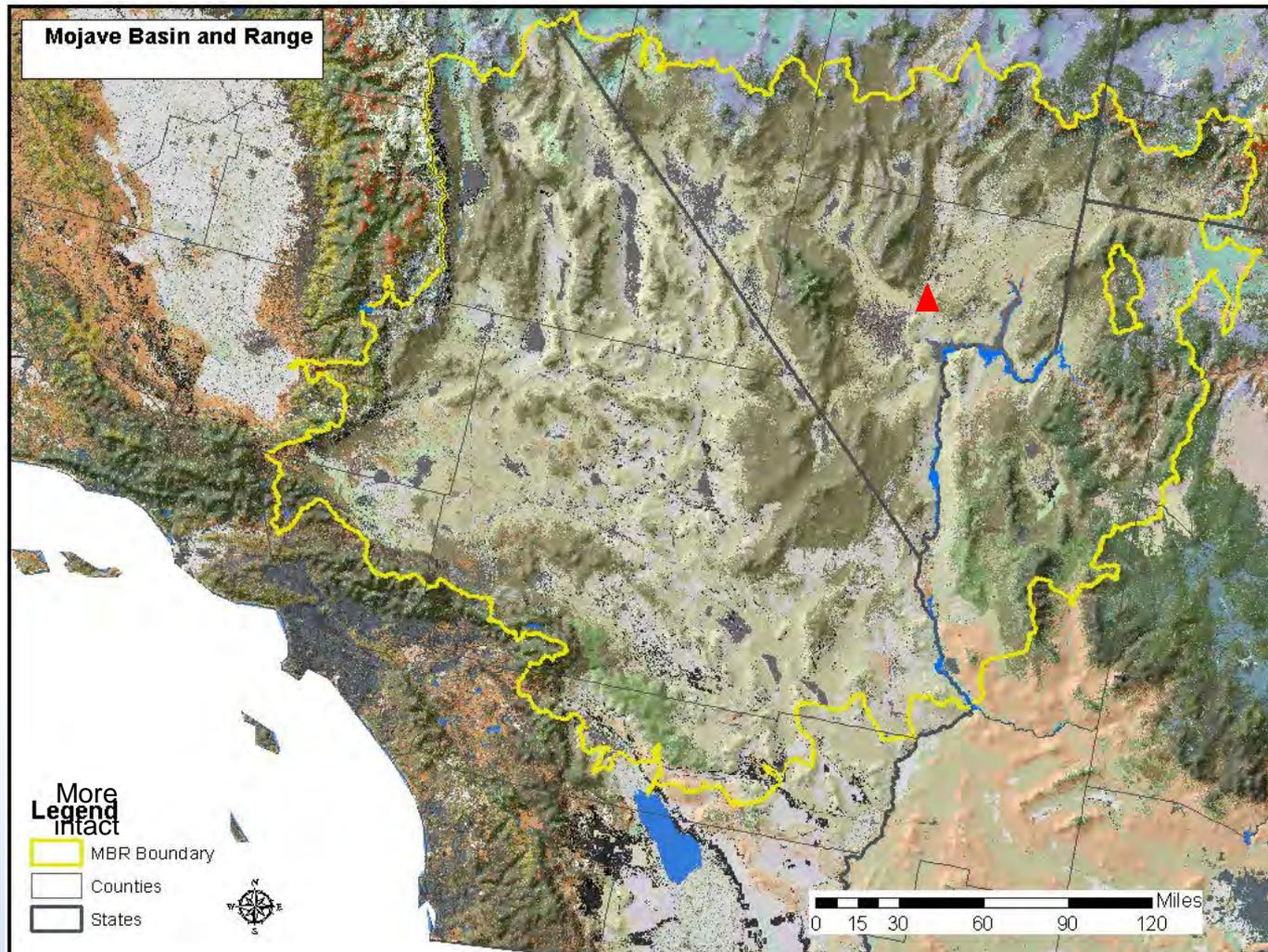


# 3. Identify At Risk Resources and Processes in the Region

- What is the region
- Identify at-risk resources and processes in the region
  - First—Resources experiencing unavoidable impacts
  - Second—Resources that have related process or functions



# Region?



- Level III ecoregion delineation of the Commission for Environmental Cooperation
- 63,377 sq. miles

# Regional Context Information Sources (not exclusive):

- BLM Rapid Eco-regional Assessments (REAs)
- BLM Resource Management Plans (RMPs)
- The Nature Conservancy Eco-Regional Assessments
- Habitat Conservation Plans
- Baseline status resources, e.g. surveys, inventories, occurrence records, studies/research
- Ethnographic studies
- BLM, county, or regional land use plans
- Federal, State, or local social and economic studies
- Resource specialist expert opinion

# Rapid Ecoregional Assessments

- Regional Context
  - Level 3 Ecoregions (CEC)
  - 5<sup>th</sup> Order Hydrologic Unit Code (HUC)
- Change Agents (CA)
  - Development
    - Energy (Renewal and Non-renewal)
    - Urban Growth
  - Fire
  - Invasive Species
  - Climate Change
- Conservation Elements (CE)

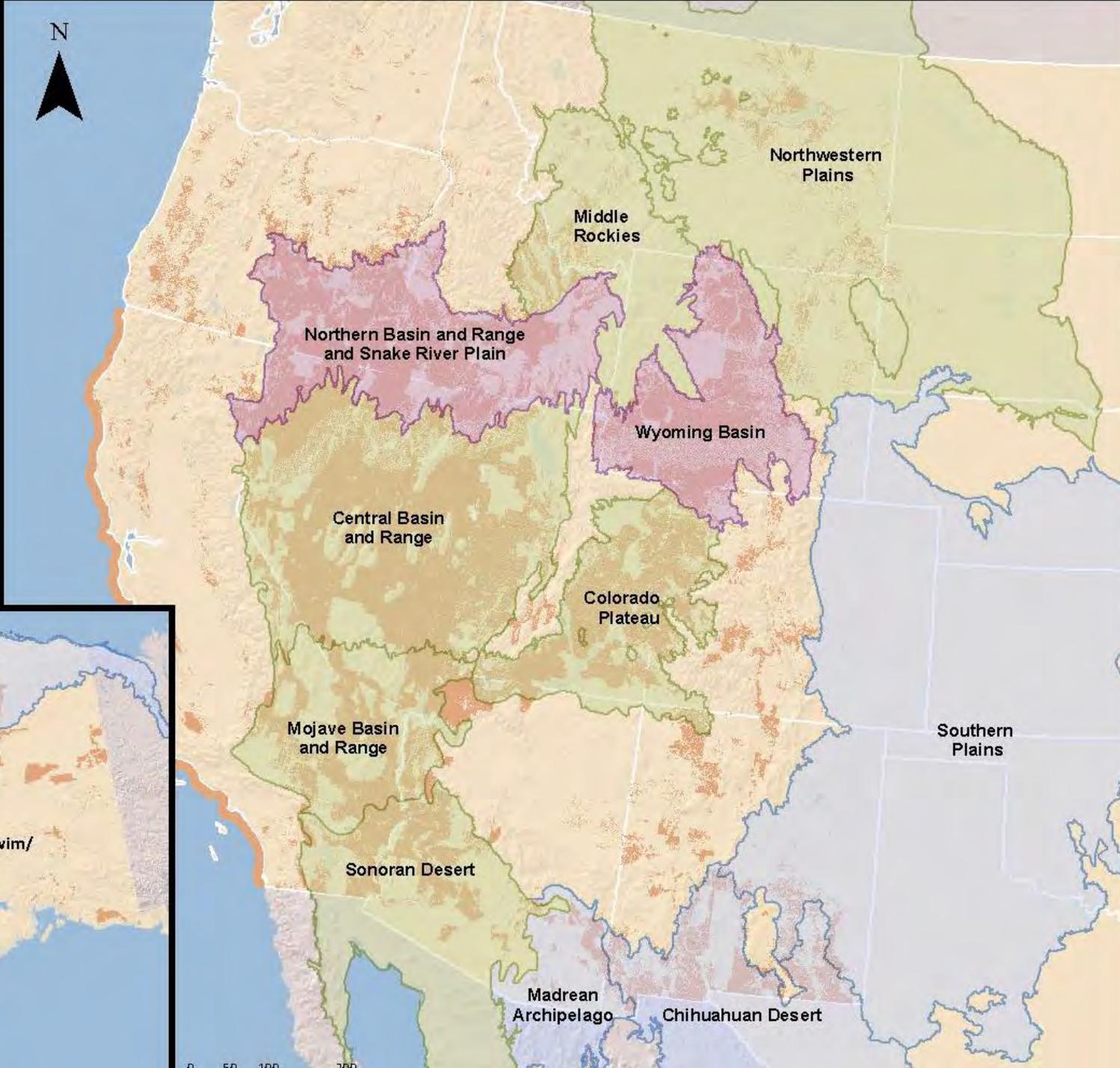
# Rapid Ecoregional Assessments



-  BLM Lands
- Year of Assessment Initiation**
-  2010
-  2011
-  2012 Pre-Assessment

For more information contact:  
Kit Muller  
(202) 912-7225  
Kit\_Muller@blm.gov

Draft: 12/17/2012

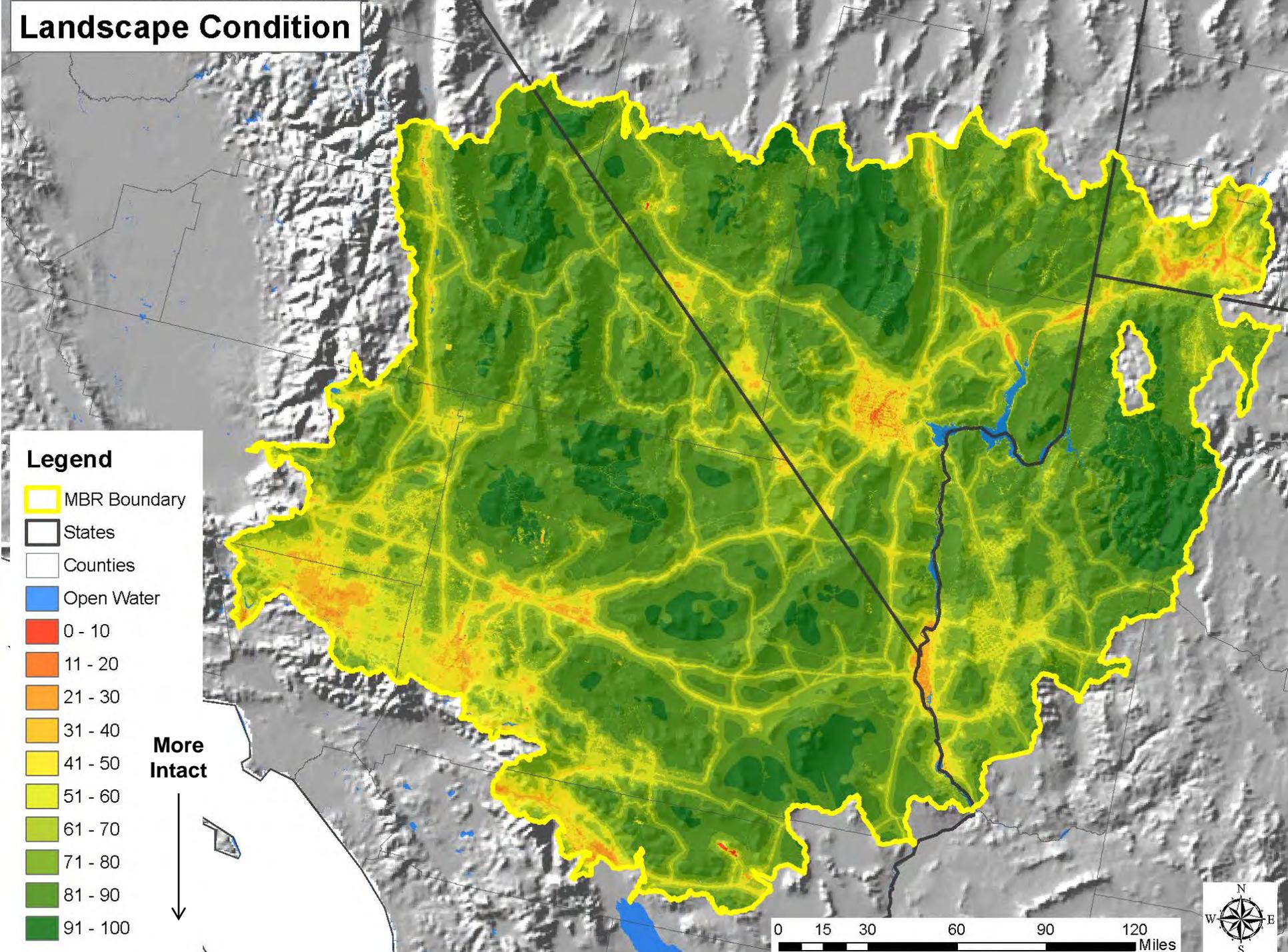
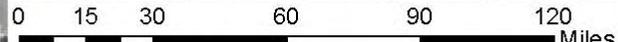


# Landscape Condition

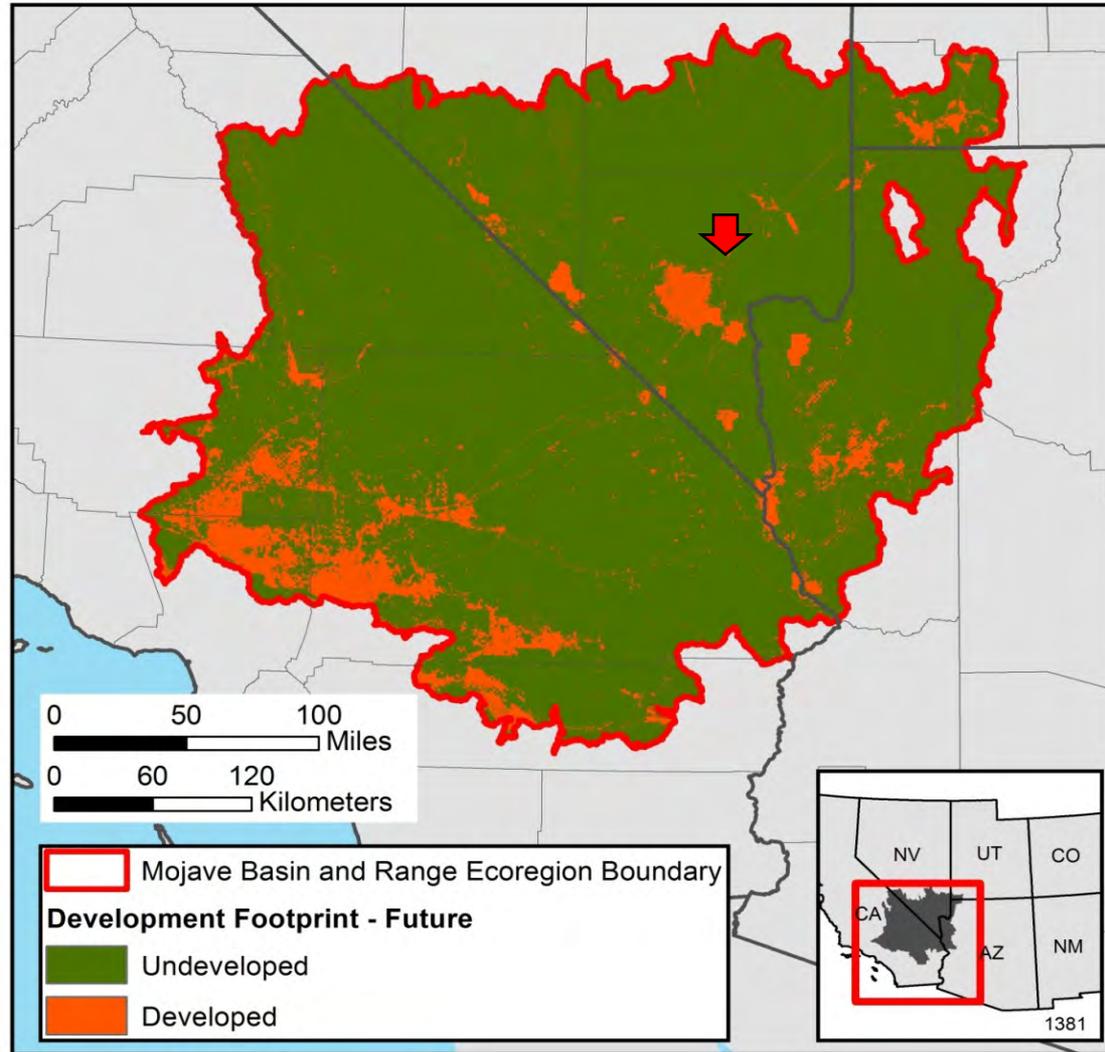
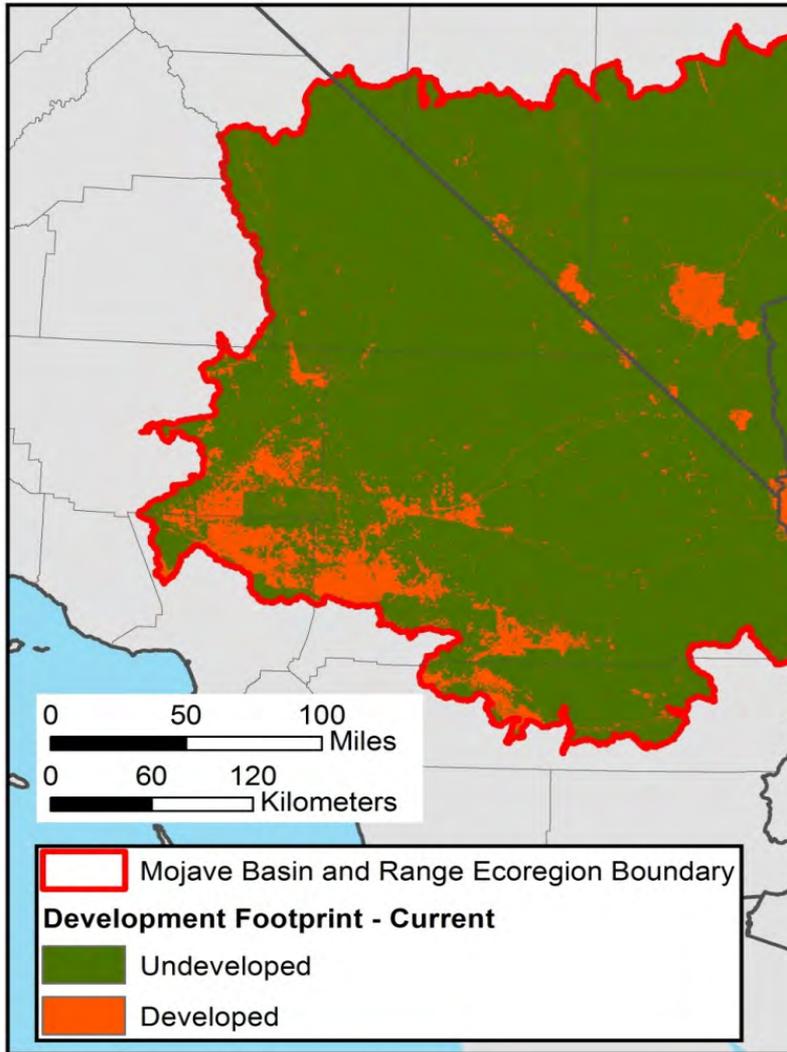
## Legend

-  MBR Boundary
-  States
-  Counties
-  Open Water
-  0 - 10
-  11 - 20
-  21 - 30
-  31 - 40
-  41 - 50
-  51 - 60
-  61 - 70
-  71 - 80
-  81 - 90
-  91 - 100

**More Intact**



# Change Agent: Development

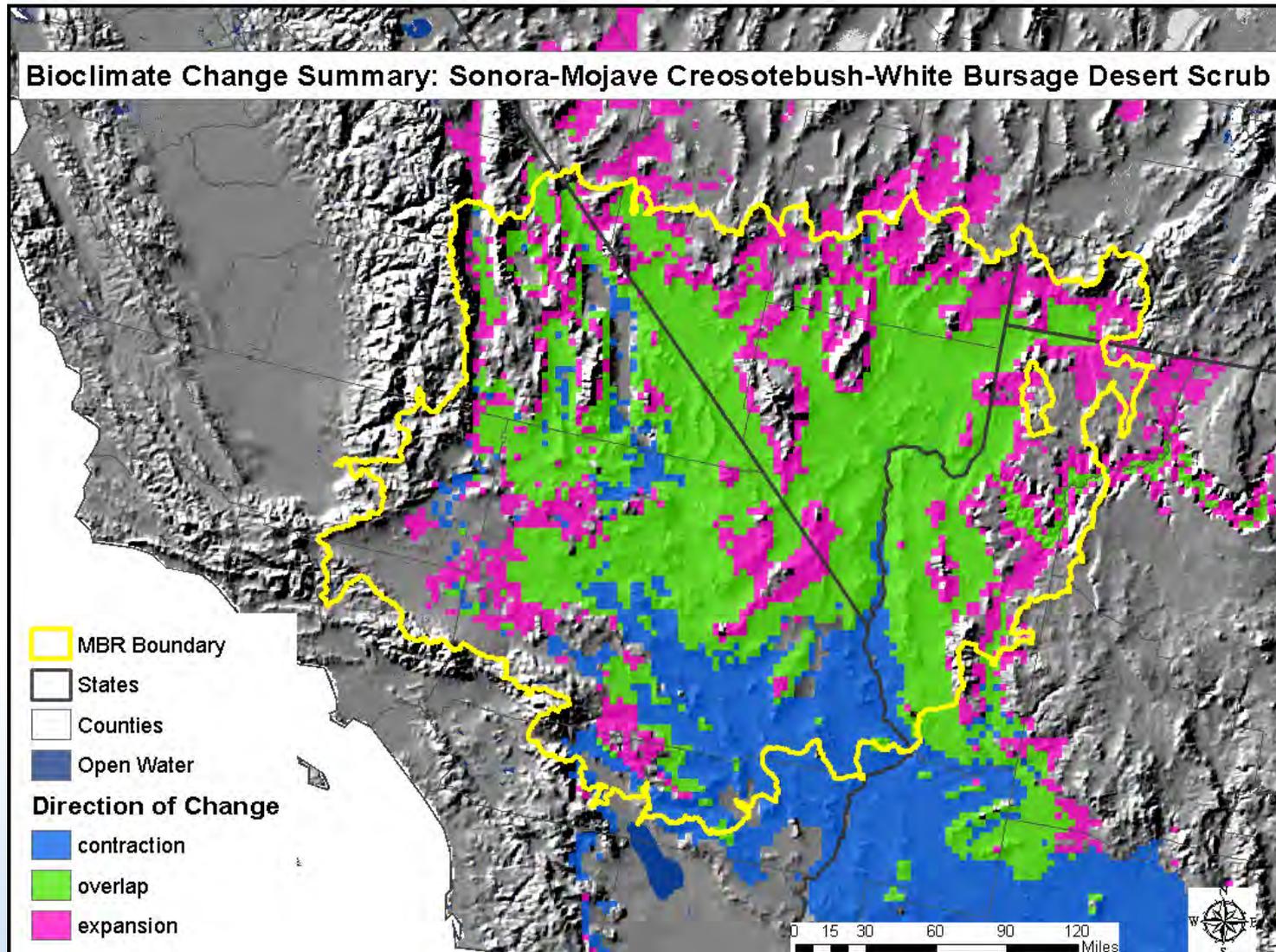


# Mojave Basin and Range Rapid Ecoregional Assessment

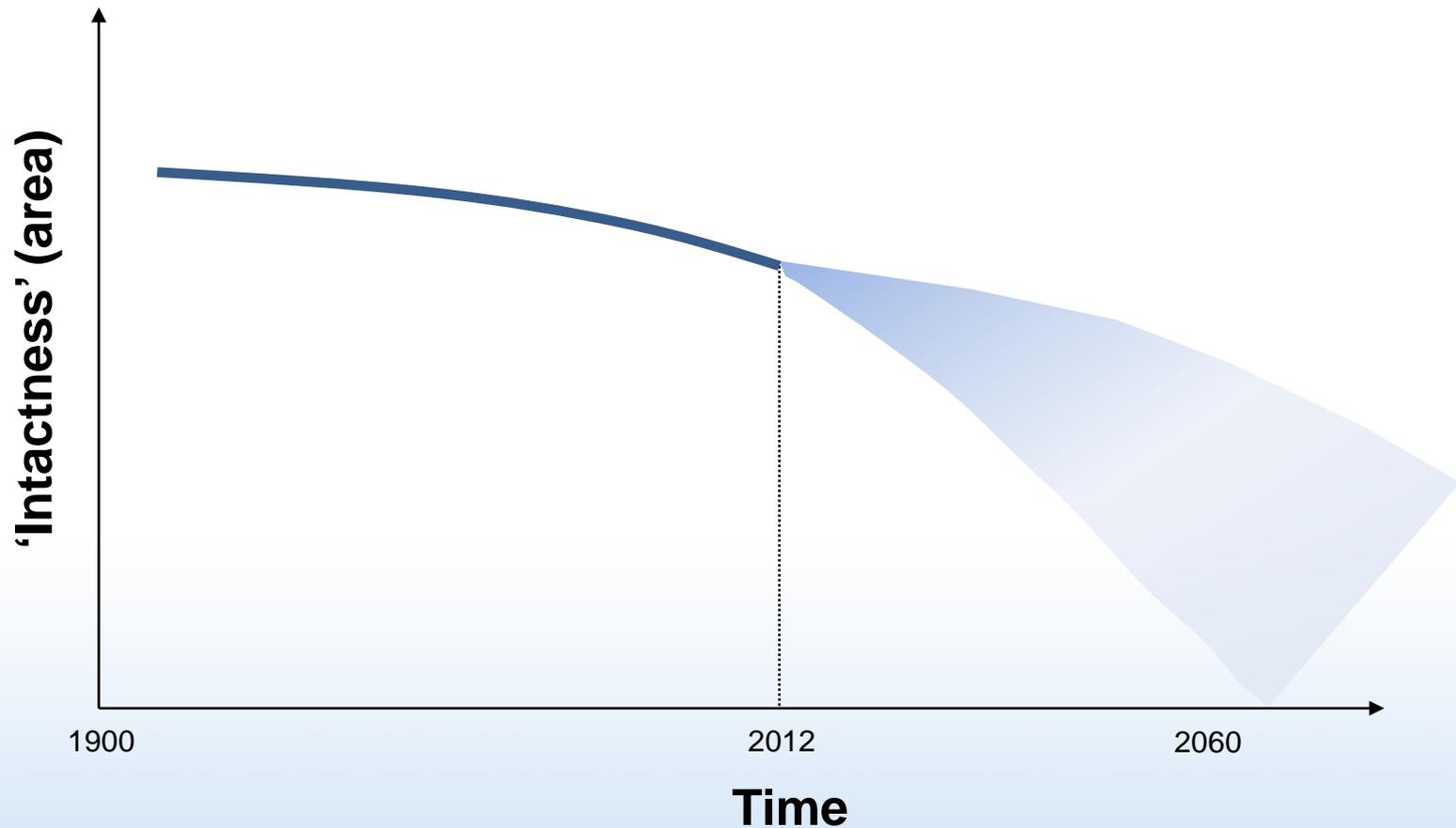
DESCRIPTION	SEZ Site-Specific Status		Status in Vicinity of SEZ (Local-Regional Status)		Landscape-Ecoregional Status		Ecoregional Trends			
	Potential Distribution (Acres) Within SEZ	Percent Within SEZ Relative to Distribution in Ecoregion	Potential Distribution (Acres) Within 5 mi of SEZ Boundary	Percent Within 5 mi Area Relative to Distribution in Ecoregion	Potential Distribution (Acres) Within Mojave Ecoregion	Percent Total Distribution Within Ecoregion	Current Conversion to Human Development (Acres)	Percent Current Conversion	Future Conversion to Human Development (Acres)	Percent Future Conversion
Sonora-Mojave Creosote bush-White Bursage Desert Scrub	5,467	0.04%	83,300	0.59%	14,085,230	34.73%	1,229,275	8.73%	1,444,510	10.26%

**Includes planned renewable energy development in the region**

# Changing Climatic Condition



# General Trend in Landscape Condition in the Mojave Desert



# What is causing the downward trend?

## Change Agents

- Development
  - Urban
  - Rural
  - Infrastructure
  - **Energy**
  - Minerals
- Casual recreation
- Climate change
- Fire
- Invasive species

- Displacement of other multiple uses
- Edge effects

# Unavoidable Impacts – Dry Lake SEZ

## Yes

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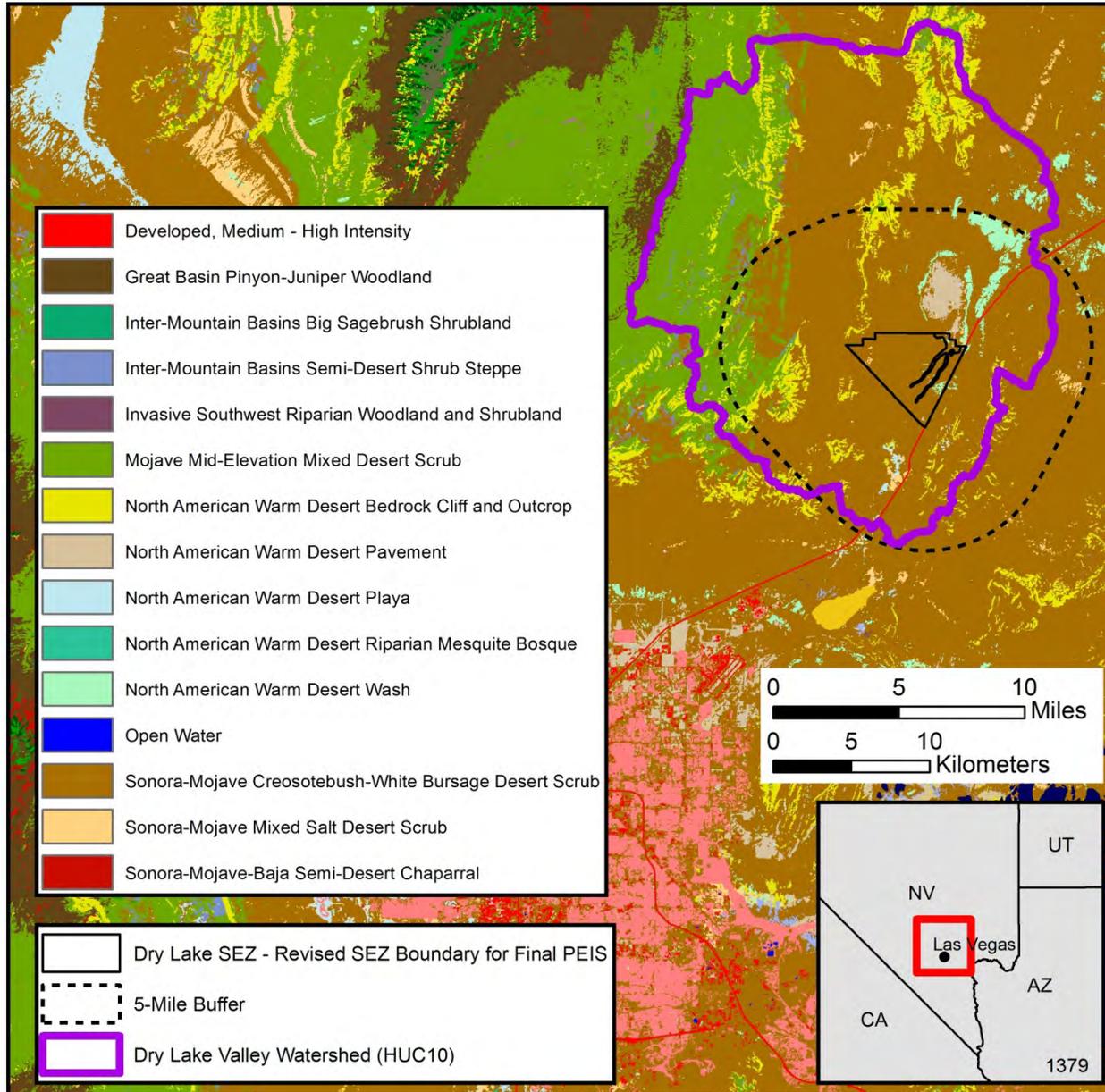
- Vegetation
- Soils/Erosion
- Wildlife
- Special Status Species - Animals
- Special Status Species - Vegetation

## Maybe

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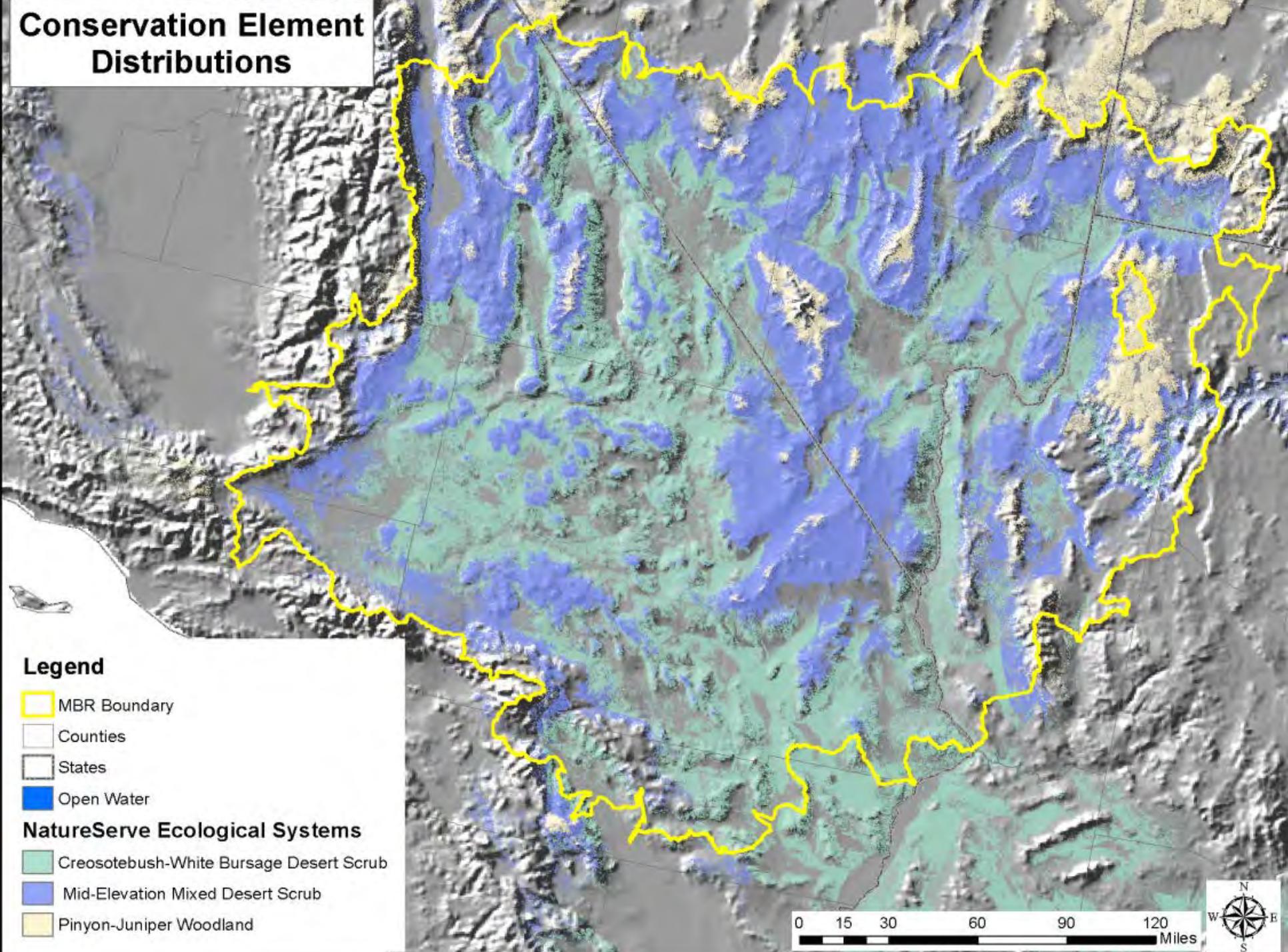
- Invasive/Noxious Weeds
- Hydrology
- Riparian
- Visual Resources
- Specially Designated Areas
- Military uses
- Cultural
- Native American Concerns

# Unavoidable Impact--Vegetation



- Sonora-Mojave Creosotebush-White Bursage Desert Scrub (S069).
  - 95% of the Dry Lake SEZ
  - 84% of the area within 5 miles of the SEZ boundary
- North American Warm Desert Wash (S020)
- Sonora-Mojave Mixed Salt Desert Scrub (S070)
- North American Warm Desert Pavement (S021)

# Conservation Element Distributions

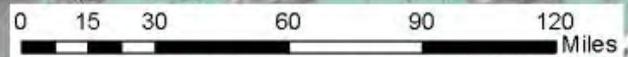


## Legend

-  MBR Boundary
-  Counties
-  States
-  Open Water

## NatureServe Ecological Systems

-  Creosotebush-White Bursage Desert Scrub
-  Mid-Elevation Mixed Desert Scrub
-  Pinyon-Juniper Woodland

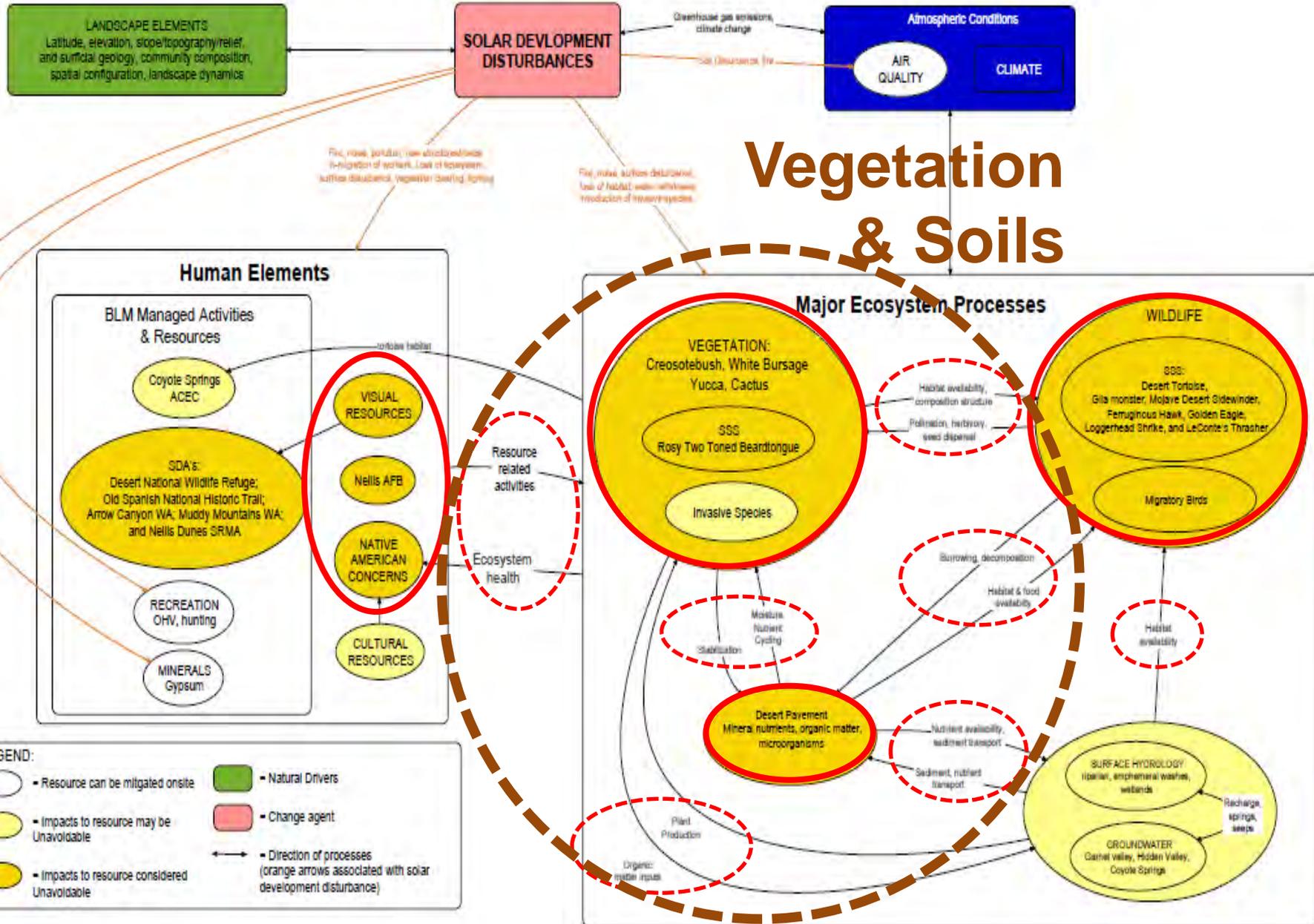


# Mojave Basin and Range Rapid Eco-region Assessment

DESCRIPTION	SEZ Site-Specific Status		Status in Vicinity of SEZ (Local-Regional Status)		Landscape-Ecoregional Status		Current Conversion to Human Development (Acres)
	Potential Distribution (Acres) Within SEZ	Percent Within SEZ Relative to Distribution in Ecoregion	Potential Distribution (Acres) Within 5 mi of SEZ Boundary	Percent Within 5 mi Area Relative to Distribution in Ecoregion	Potential Distribution (Acres) Within Mojave Ecoregion	Percent Total Distribution Within Ecoregion	
Sonora-Mojave Creosote bush-White Bursage Desert Scrub	5,467	0.04%	83,300	0.59%	14,085,230	34.73%	1,229,275



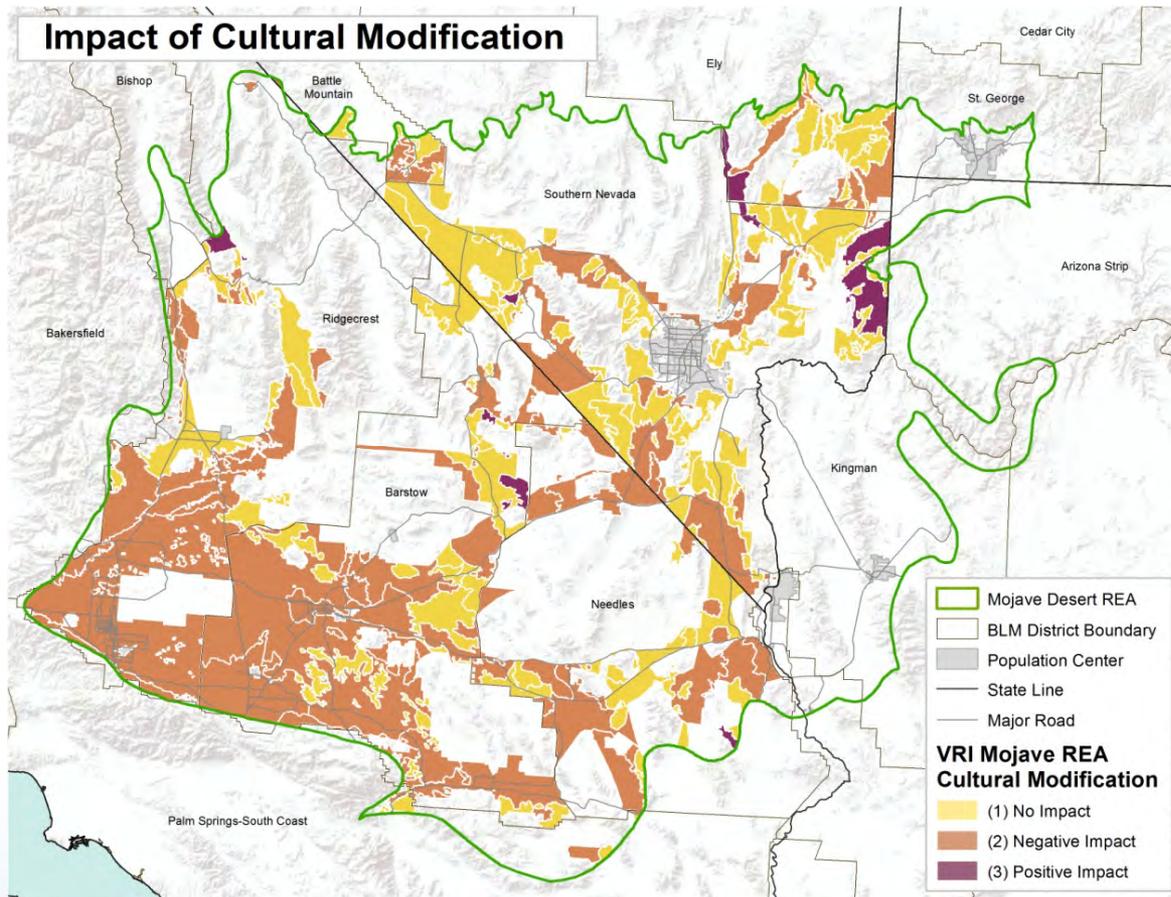
# Tier 3 Conceptual Model Dry Lake SEZ Solar Development Disturbances



## Vegetation & Soils

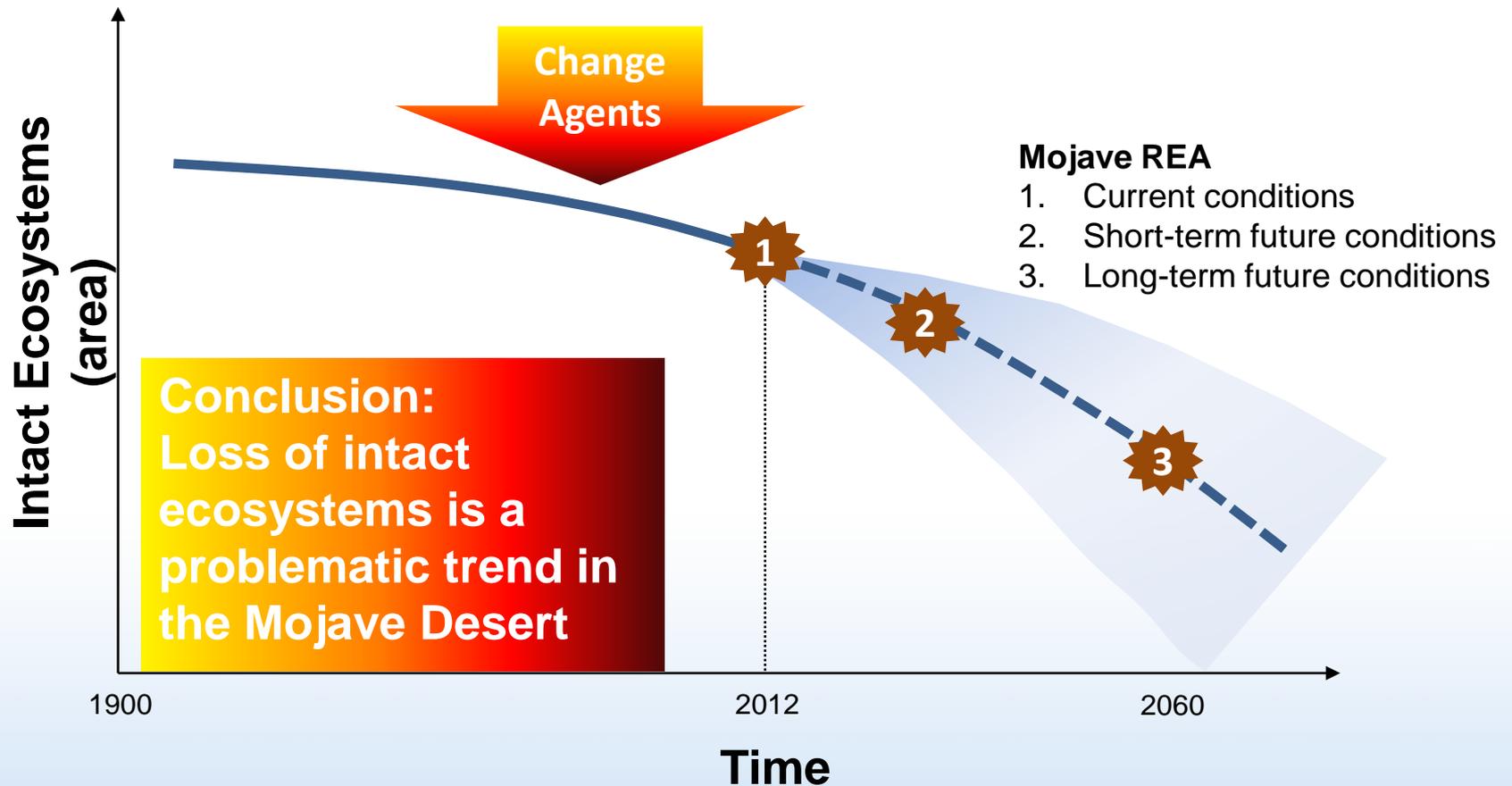
<b>Ecological Process</b>	<b>How will the loss of vegetation affect the ecosystem processes?</b>
Soil Stabilization	Loss of vegetation will destabilize soils on-site and increase the risk of erosion.
Air Quality	Loss of vegetation will reduce the quantities of carbon dioxide absorbed and oxygen produced.
Water Quality	Development will alter natural run-off pattern and sediment load in a closed hydrologic basin.
Habitat (general)	Loss and/or degradation of habitat for several species of small mammals and reptiles.
Habitat (SSS)	Loss of non-critical habitat for the Desert Tortoise. Degradation of habitat for Bald and Golden Eagles and migratory birds.

# Trend in Visual Resources

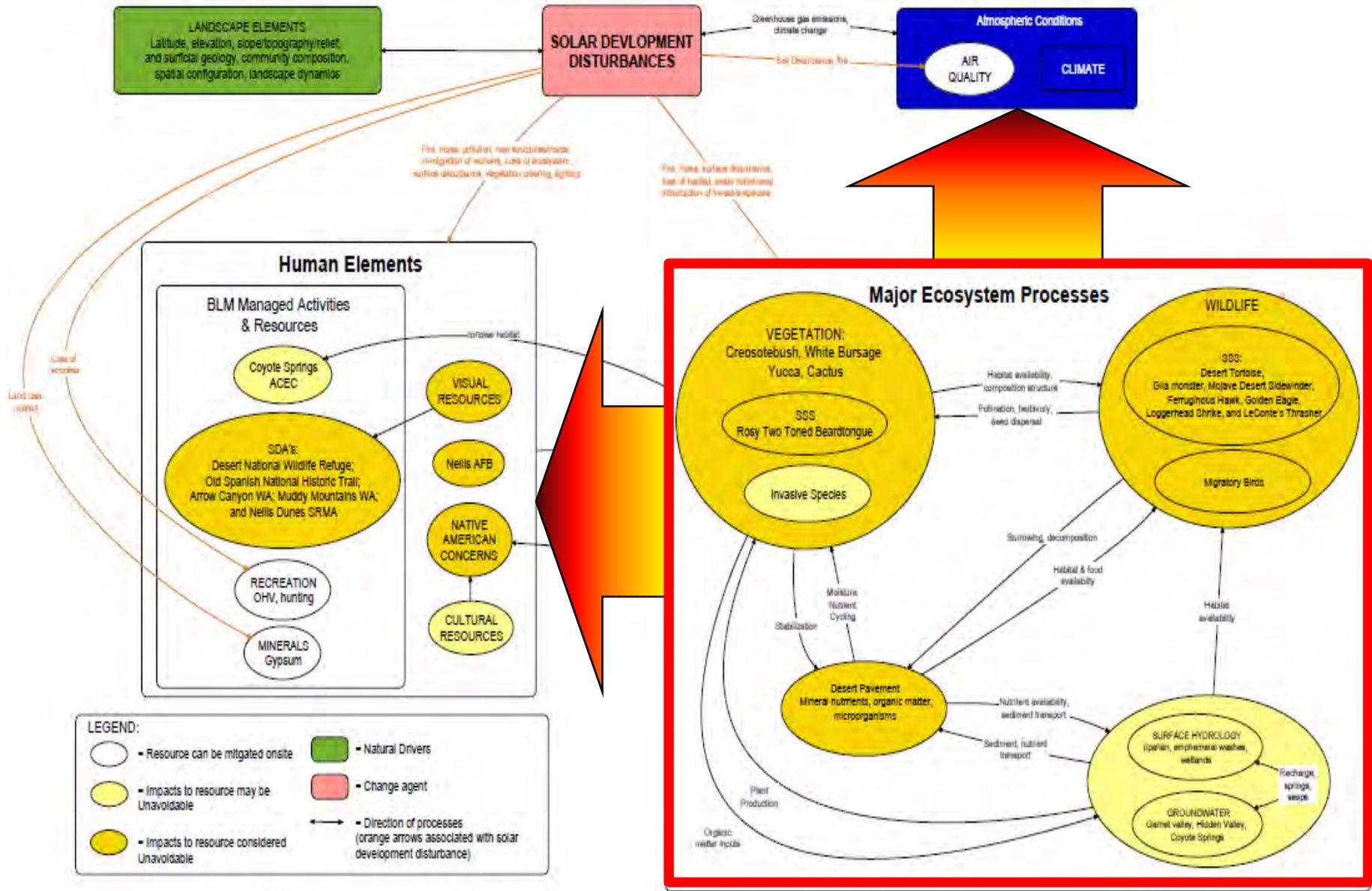


- **47%** of the BLM lands remain **unchanged** (cultural modifications may be present, but have not impacted visual resources)
- **48%** are in decline

# General Trend in Landscape Condition in the Mojave Desert

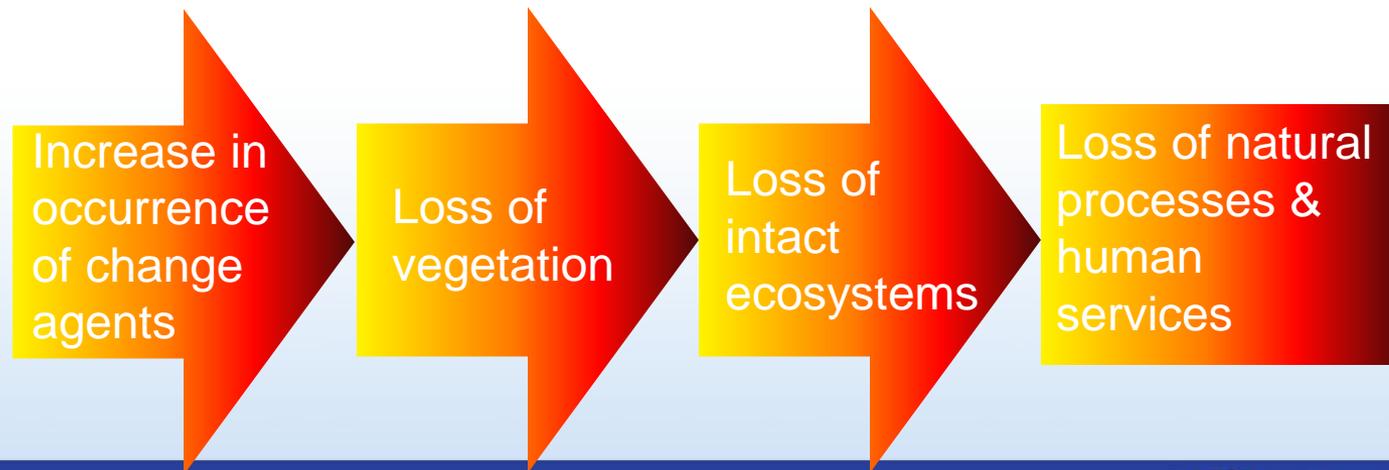


# Impact of Landscape Condition Decline



# Deliverables

- Refined map of SEZ
- Conceptual model identifying the role resources play in the function of the relevant ecological, social, and cultural systems present in the region
- Method to identify problematic trends in the region



# At Risk Resources (i.e. problematic trends)

- Mojave Ecoregion
  - Intact Ecosystems
- Unavoidable Impacts in the Dry Lake SEZ
  - Ecosystem processes
  - Special Status Species
    - Animals
    - Plants
  - Visual Resources
  - Cultural Resources
  - Native American Concerns



# Impacts that Warrant Off-site Mitigation

## Solar Regional Mitigation Planning Pilot Project

Michael Dwyer

# Methodology for Identifying the Impacts of Solar Development that Warrant Off-site Mitigation

1. Refine avoidance areas
2. Adopt a conceptual model
3. Identify at-risk resources and processes in the region
4. Estimate how the unavoidable impacts of solar development will affect the status and trend of the at-risk resource values.
5. Identify decision criteria
6. Apply the criteria to identify which unavoidable impacts warrant off-site mitigation.



## 4. Affect of unavoidable impacts on at-risk resources

- Estimate how the unavoidable impacts of developing the Dry Lake SEZ affect the status and trend of the at risk resource values at both local and regional scales.

# Unavoidable Impacts

## Yes

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- Soils/Erosion
- Wildlife
- Special Status Species - Animals
- Vegetation
- Special Status Species - Vegetation

## Maybe

---

- Invasive/Noxious Weeds
- Hydrology
- Riparian
- Visual Resources
- Specially Designated Areas
- Military uses
- Cultural
- Native American Concerns

# At Risk Resources (i.e. problematic trends) in the Mojave Desert for the Unavoidable Impacts in the Dry Lake SEZ

- Special Status Species
  - Animals
  - Plants
- Intact Ecosystems
- Cultural
- Visual Resources

Native American  
Concerns

# Unavoidable Impacts

Resource	Impacts	On-site Mitigation	Unavoidable Impacts?
Vegetation	<p><b>Direct:</b> Development will adversely affect characteristic vegetation (e.g., creosotebush, white bursage, cactus, yucca) through destruction and loss of habitat</p> <p><b>Indirect:</b> Loss of native vegetation due to dust deposition from construction and operations, increased surface water runoff and related erosion, or through the introduction of invasive species.</p> <p><b>Cumulative:</b> impacts on primary cover species would be small due to their abundance in the region and the relatively small portion of total lands required for solar development.</p>	Possible to minimize disturbance of existing vegetation for some technologies. Salvage cactus and yucca prior to disturbance.	Yes

# Effect of Developing Dry Lake SEZ on problematic regional trends

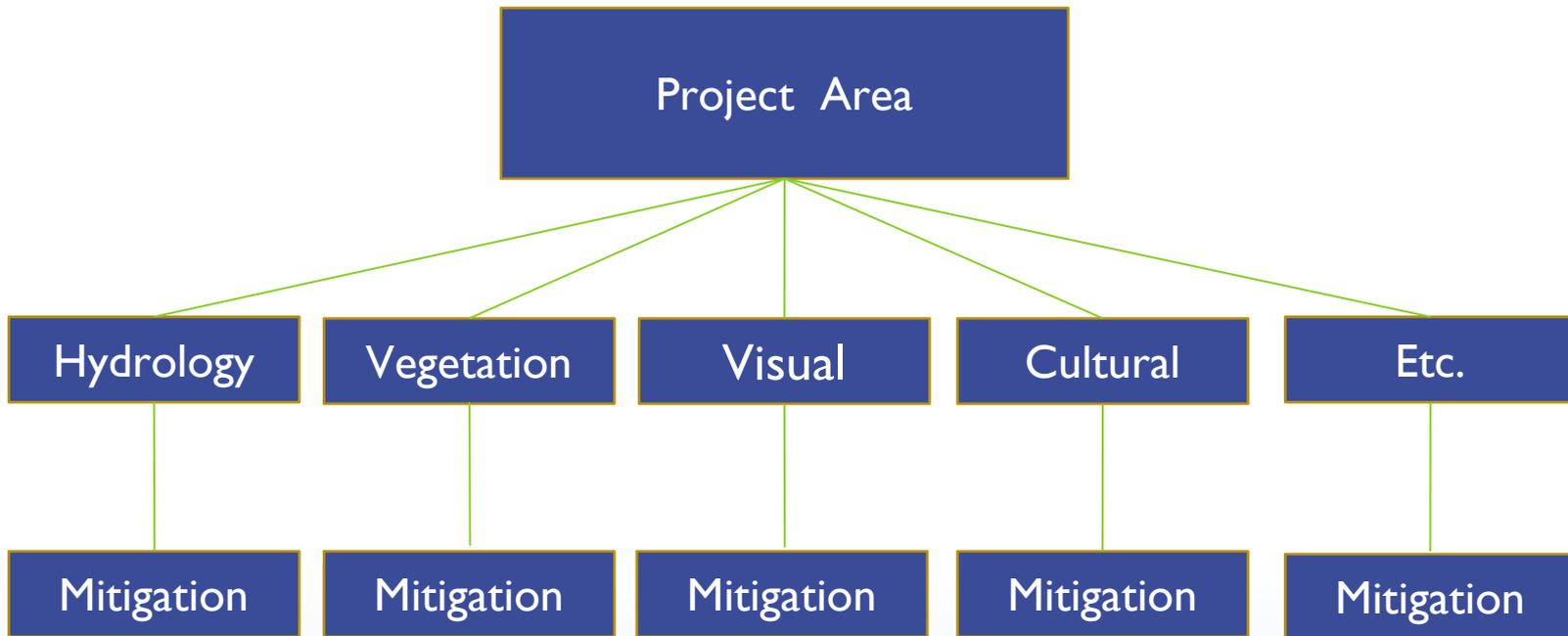
Resource	Local Impact	Impact in the Region
Soils	Loss of up to 5, 171 acres of biological soils and/or desert pavement	Loss will contribute a small amount to continuing a downward trend in intact soils in the Mojave Desert (loss = 0.013% of the soils in the Mojave Desert)
Wildlife	Loss of up to 5, 171 acres of habitat for several species of reptiles, mammals, birds, and invertebrates	Loss will contribute a small amount to continuing a downward trend in intact wildlife habitat in the Mojave Desert (loss = 0.04% of the habitat provided by the creosotebush-white bursage vegetation community in the Mojave Desert)
Special Status Species – Animals	Loss of up to 5, 171 acres of habitat for: the Desert Tortoise (Federally listed); six special status species animals/birds; migratory birds; and bald and golden eagles.	Loss will contribute to continuing a downward trend in intact special status species habitat in the Mojave Desert

# Effect of Developing Dry Lake SEZ on problematic regional trends

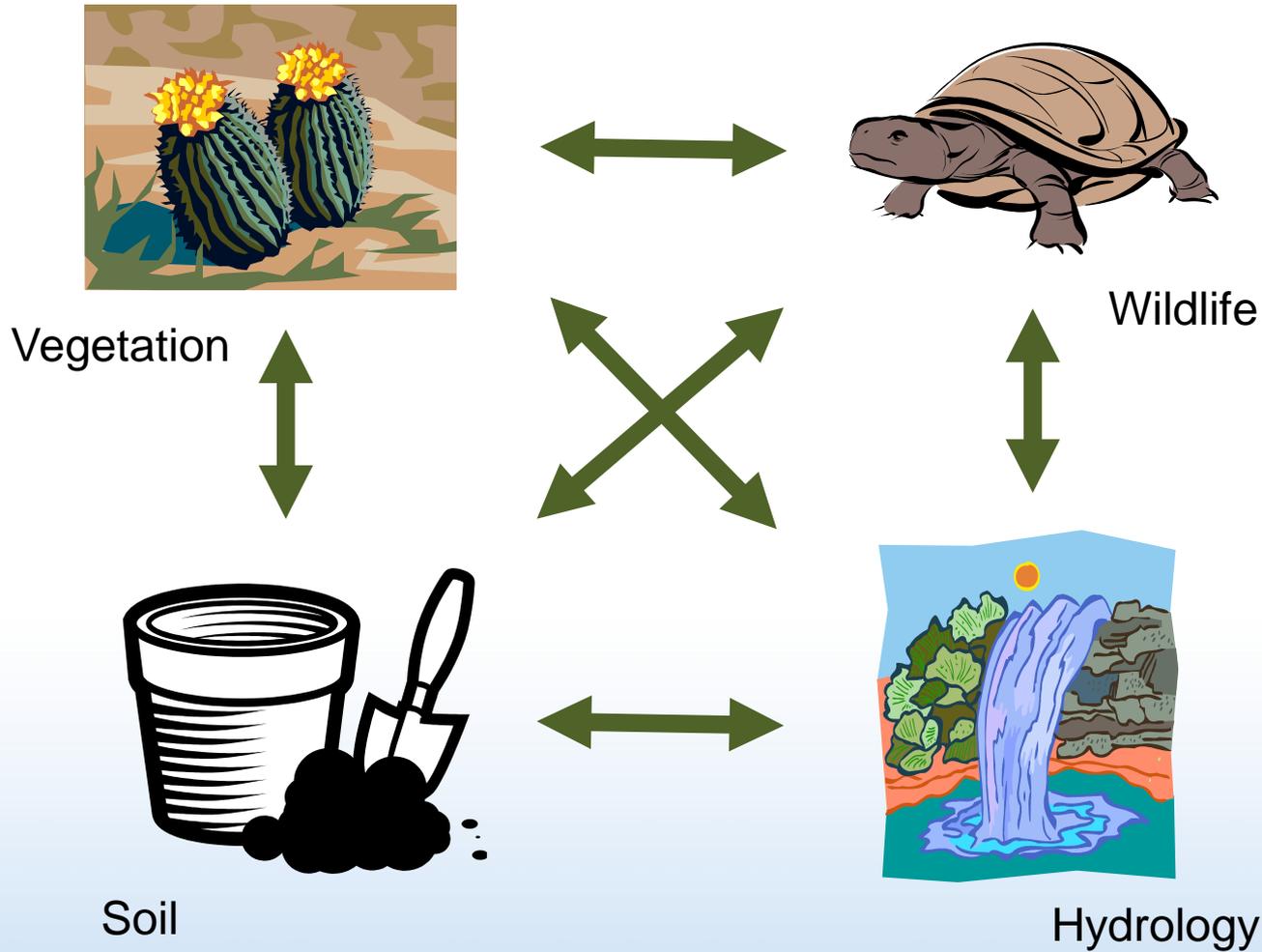
Resource	Local Impact	Impact in the Region
Vegetation	Loss of up to 5, 171 acres of primarily creosotebush – white bursage vegetative community	Loss will contribute a small amount to continuing a downward trend in intact creosotebush – white bursage vegetative communities in the Mojave Desert (loss = 0.04% of the creosotebush – white bursage vegetative community in the Mojave Desert)
Special Status Species Plants	Loss of habitat and potential loss of individual plants -- Rosy Two-toned Beardtongue	Loss will contribute a small amount to continuing a downward trend in habitat and the occurrence of Rosy Two-toned Beardtongue

# Approach to Offsite Mitigation

- Traditional Approach: Mitigating resources independently

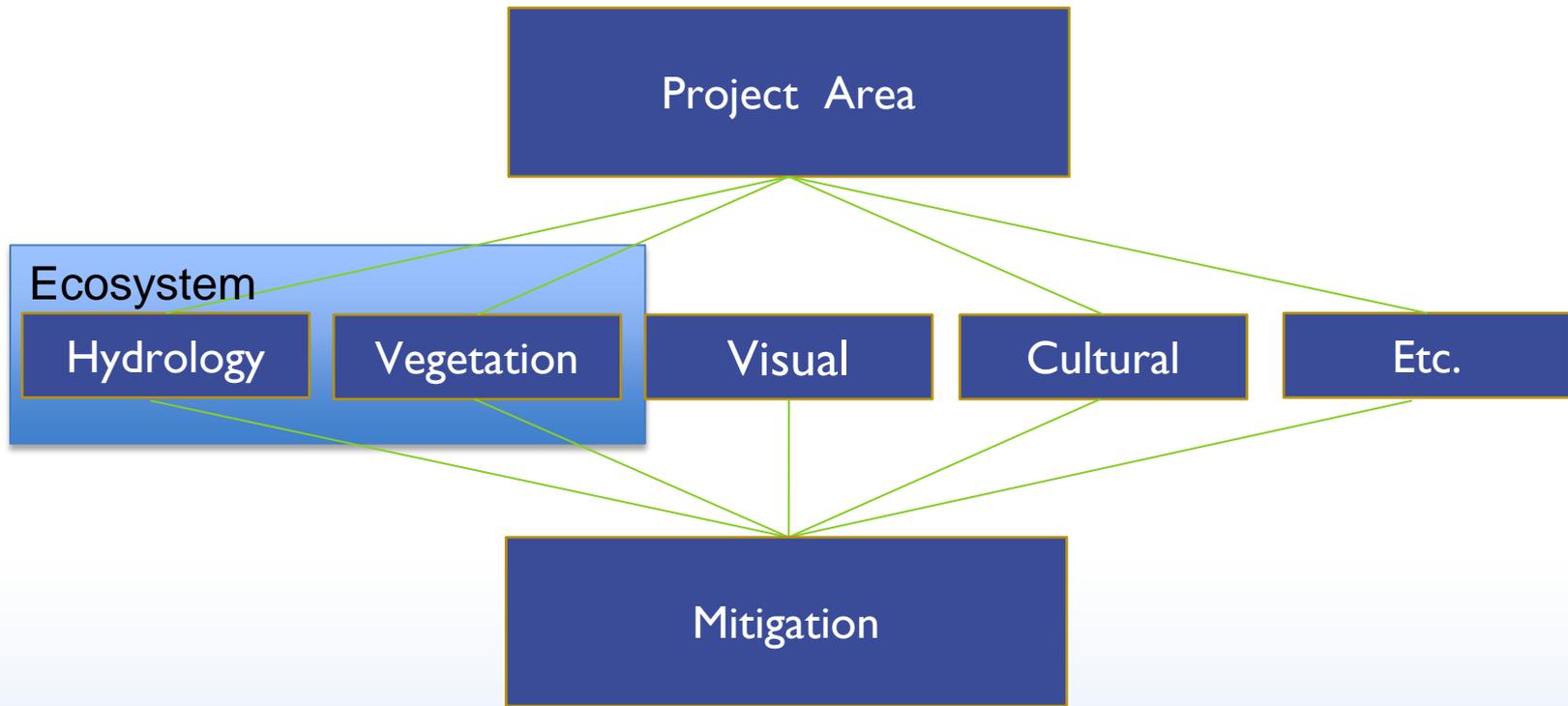


# Individual Resources Versus Ecosystem

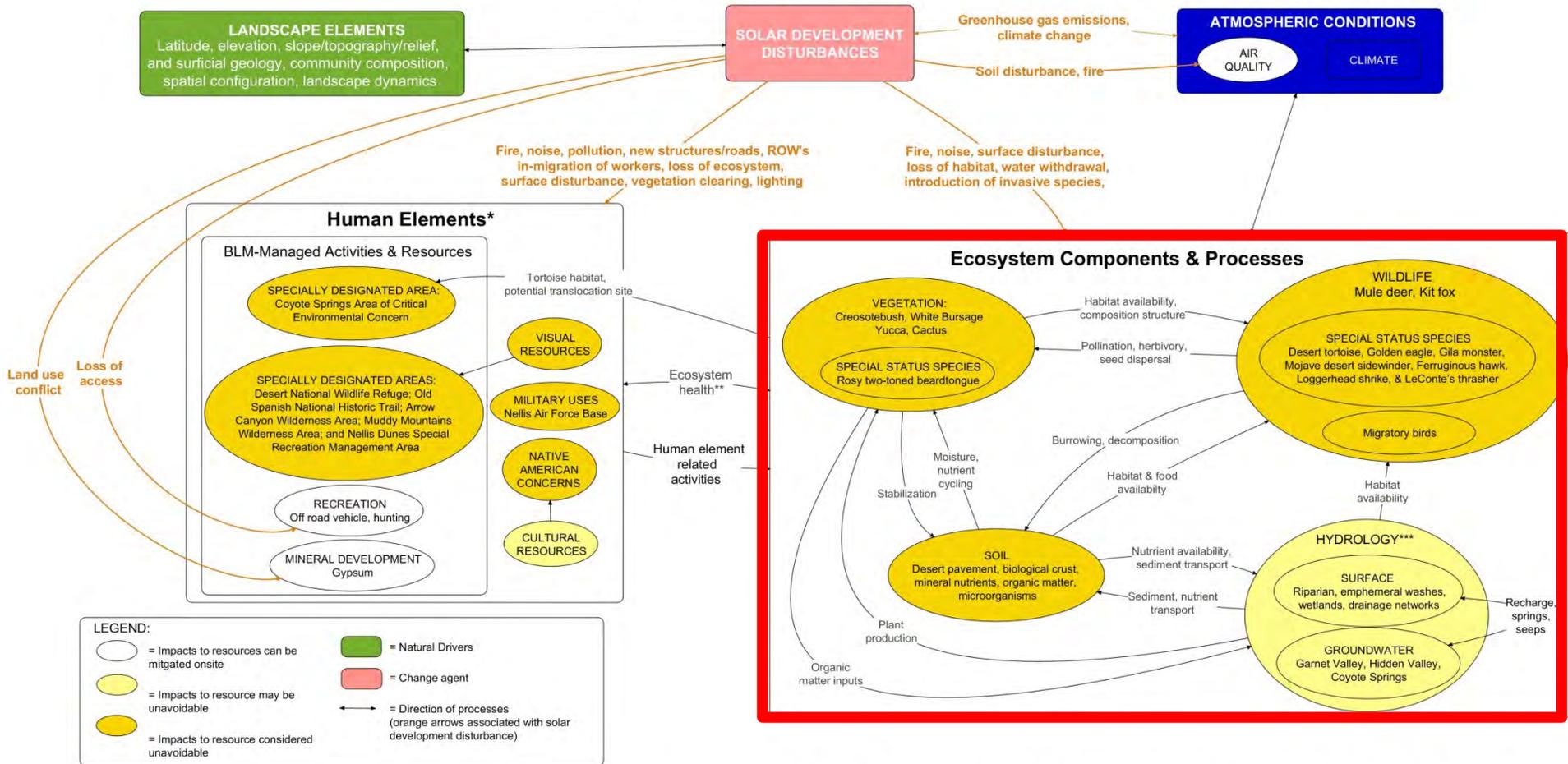


# Approach to Offsite Mitigation

- Value added Approach: Mitigating resource impacts collectively



# Tier 3 Conceptual Model Dry Lake SEZ Solar Development Model



\* Human Elements includes the human concerns and related resources for which impact evaluation was included in the Solar PEIS. These are activities and resources with (or requiring) human engagement in one of the following ways: 1) requires active participation in management of a resource or activity (e.g., lands and realty, specially designated areas, transportation, grazing, mineral development, recreation, military uses); 2) addresses the perspective or perception of a resource (e.g., visual resources, acoustics, lands with wilderness characteristics, cultural); and/or 3) addresses human-specific values (e.g., cultural resources, Native American concerns, socioeconomics, environmental justice).

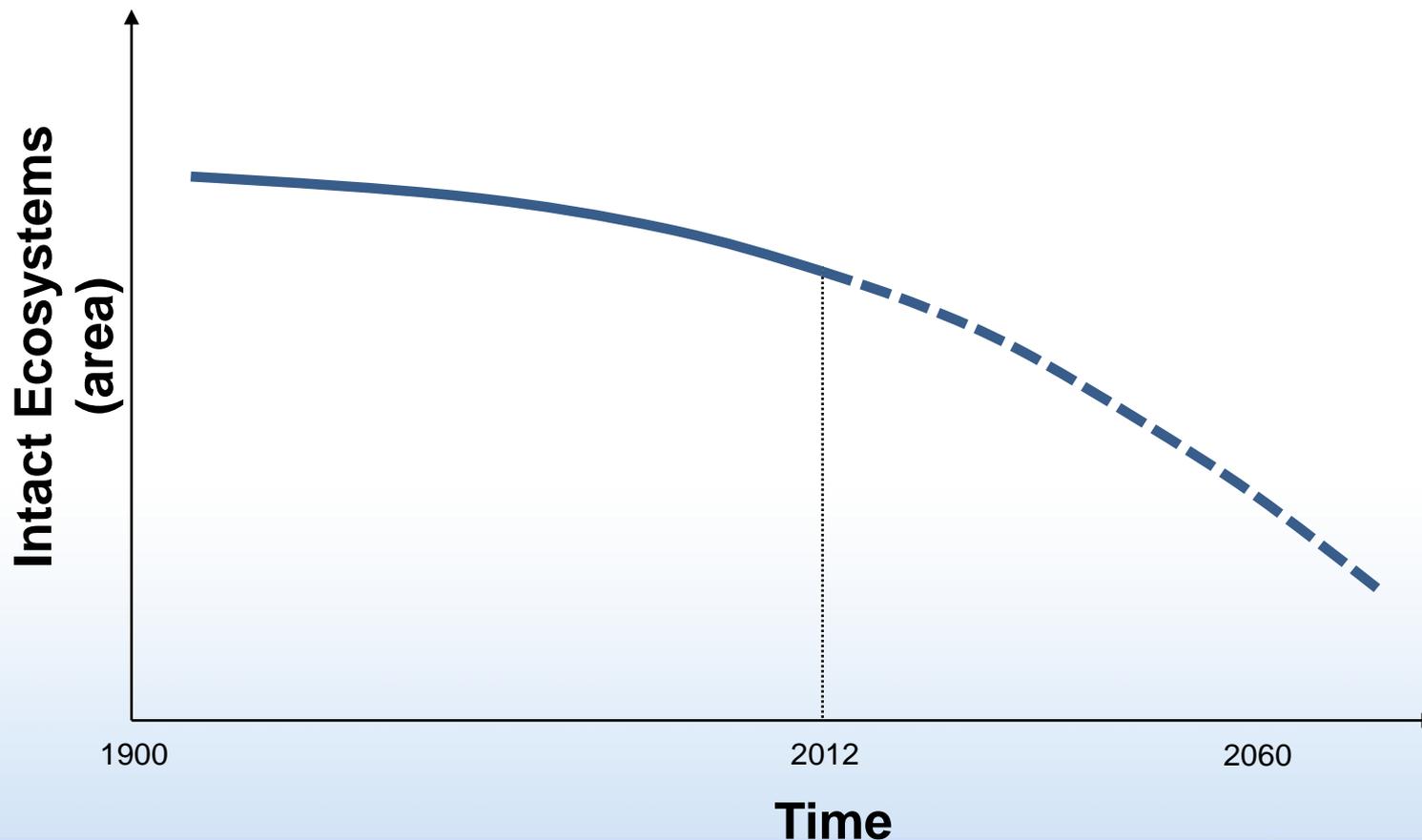
\*\*Ecosystem health is referred to as the degree to which the integrity of the soil and the ecological processes of the ecosystem are sustained (BLM Handbook H-4180-1). Ecosystem health can influence Native American concerns, specially designated areas, and recreation. Human elements can also influence ecosystem components (e.g., recreation can compact soils, hunting can impact species, etc.).

\*\*\*Unavoidable hydrologic impacts may occur due to changes in drainage and recharge patterns. Potential impacts to water availability will be mitigated on-site through the implementation of a net neutral use policy (water rights must be purchased).



- It's about the ecosystem
  - Can't separate key components

# Trend in Area of Intact Ecosystems Land in the Mojave Desert

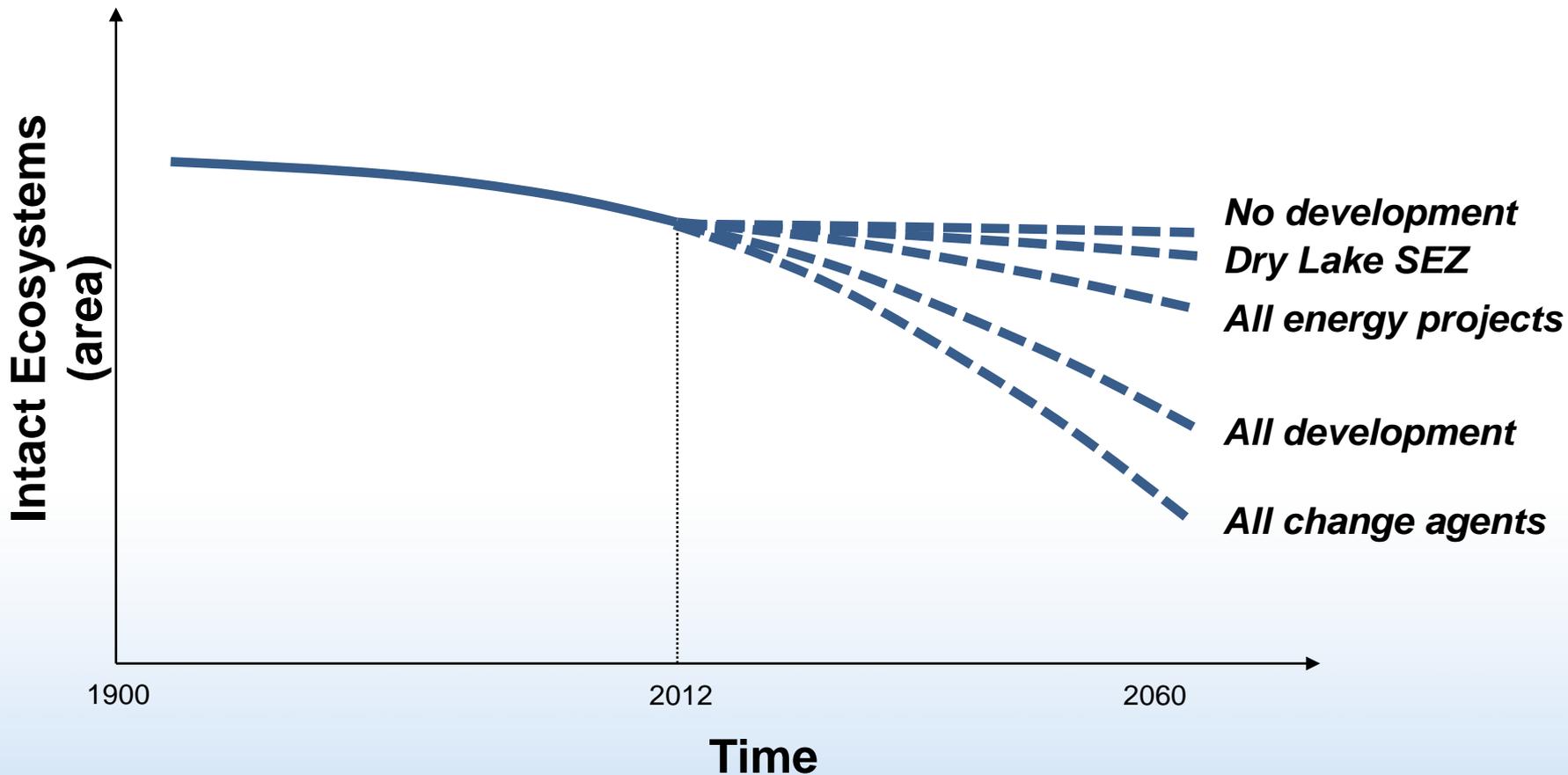


# Why? What is causing the downward trend?

## Change Agents

- Development
  - Urban
  - Rural
  - Infrastructure
  - Minerals
  - Energy
    - Solar
      - Dry Lake SEZ
- Casual recreation
- Climate change
- Fire
- Invasive Species

# Effect of Change Agents on Landscape Condition in the Mojave Desert

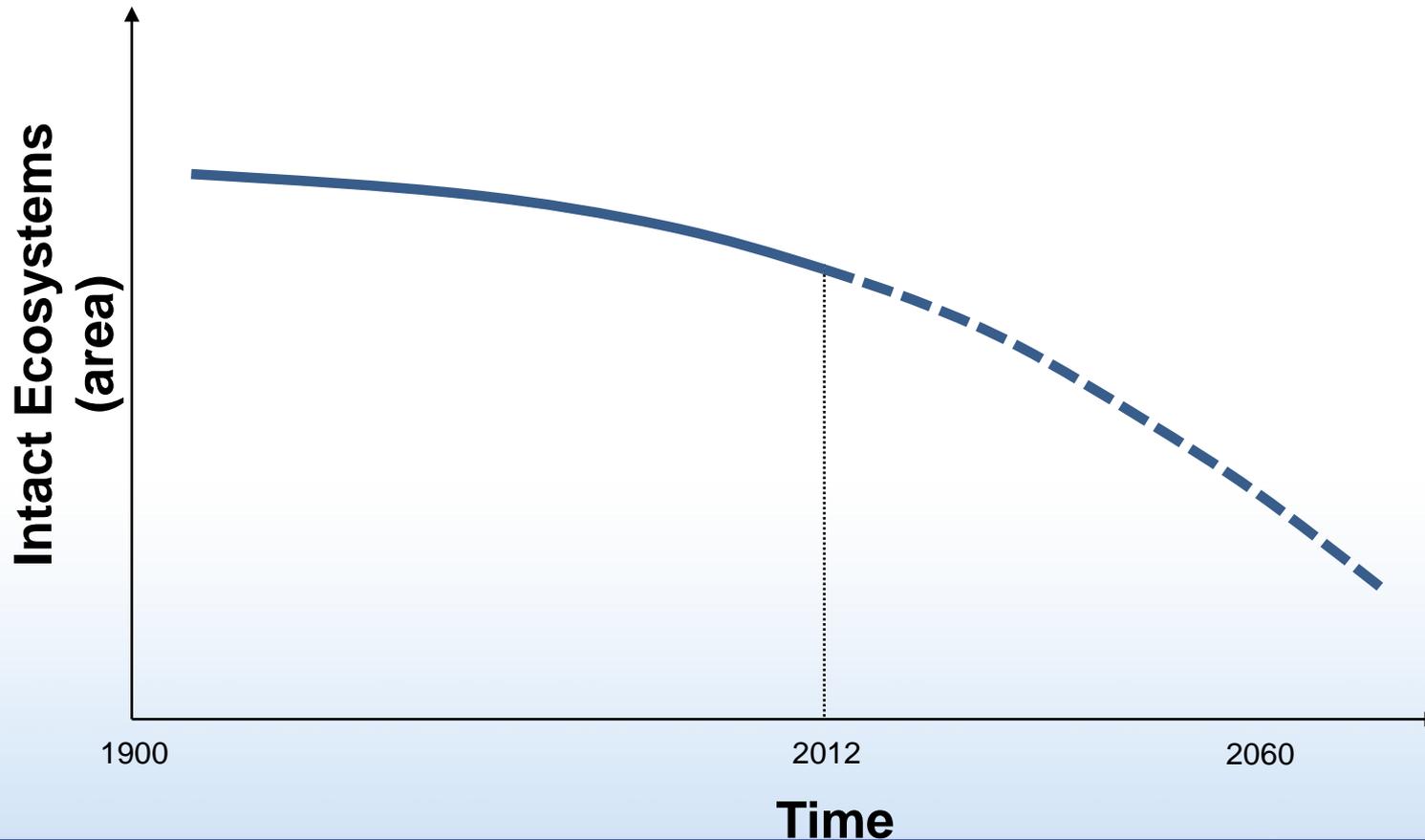


# Visual Resources

- Do unavoidable impacts warrant off-site mitigation?



# Trend in Unmodified Landscapes in the Mojave Desert



# Effect of Unavoidable Impacts

## Dry Lake SEZ footprint

- **Over 53%** of the landscape has been visually altered.
- SEZ is located within the 53% of visually changed landscape will **not contribute to an overall increase in the regional trend**, but will increase the visual prominence of change within this particular view-shed.

# Existing Visual Condition of the SEZ

## Dry Lake SEZ Scenic Quality reduced by Cultural Modifications – as viewed from closest Key Observation Points

I-15 Northbound



I-15 Southbound

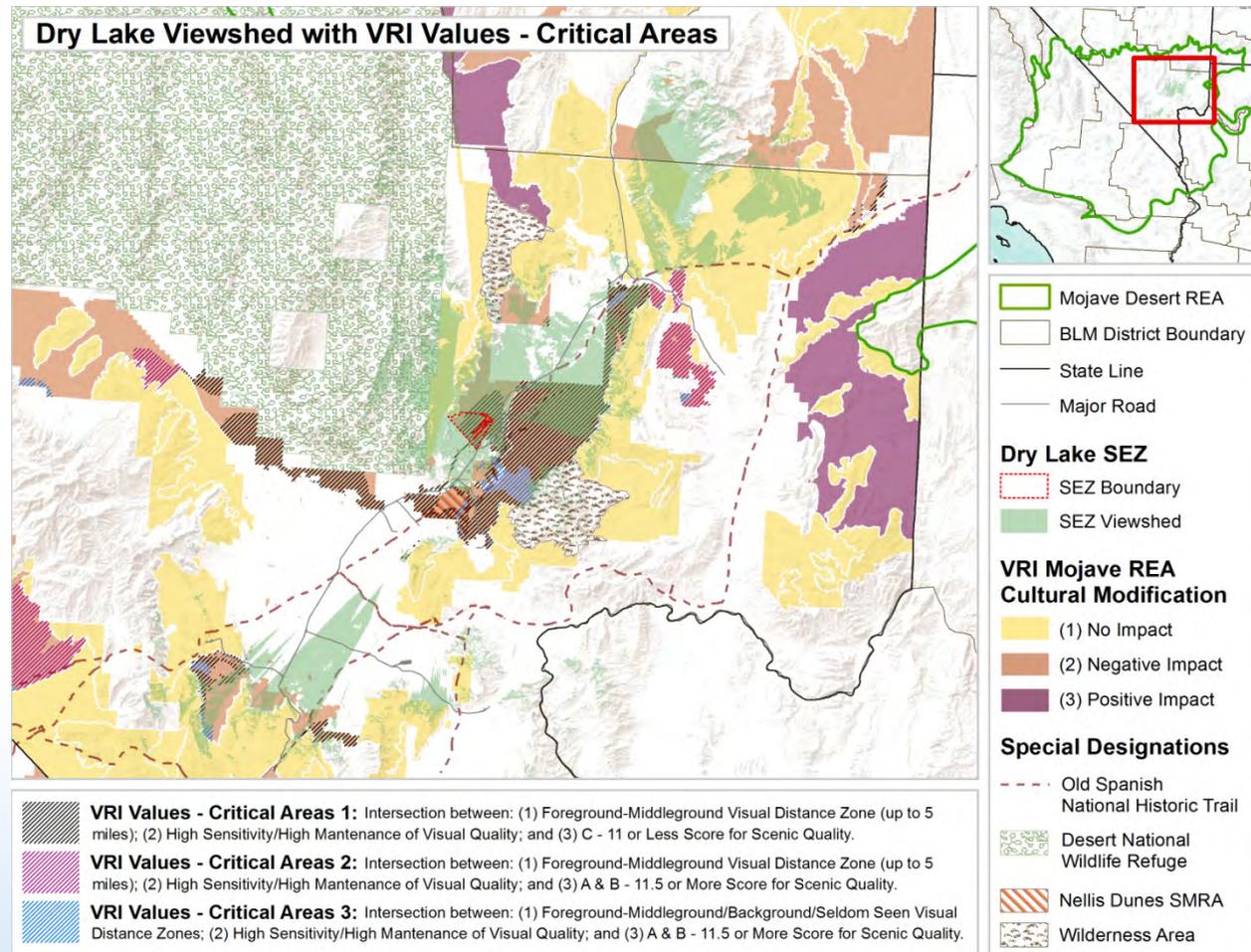


Highway 93 viewing Northwest



# Special Designations: Mitigating within the View-shed

- Muddy Mountains
- National Desert Wildlife Refuge
- Arrow Canyon Wilderness Area
- Nellis Dunes SRMA



## 5. Identify Decision Criteria

# What impacts warrant off-site mitigation?

- The legal status, or state or national policy status of the resource
- The rarity of the resource
- The resilience of the resource in the face of change and impact
- The relative importance placed on the resource in the land use plan

*BLM Off-site Mitigation Policy*

## 6. Unavoidable Impacts that Warrant Off-site Mitigation

- Apply the criteria to identify which unavoidable impacts warrant off-site mitigation

**IDT**

# Resources protected by law/policy

- Threatened and Endangered Species
- Bald & Golden Eagles
- Migratory Birds
- Special Status Species
- Specially Designated Areas
- Water rights
- Cultural resources (including historical trails)

# Resilience

- Without active restoration, it takes the Mojave Desert:
  - 76 years for the reestablishment of perennial plant cover
  - 215 years for the reestablishment of both perennial and annual plant cover

Abella, 2010

# Visual Resources

- The relative importance placed on the resource in the land use plan: **Designated as VRM Class III – moderate level of importance**
  - *The objective of this class is to partially retain the existing character of the landscape.*
  - *The level of change to the characteristic landscape should be moderate.*
  - *Management activities may attract attention but should not dominate the view of the casual observer.*
  - *Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.*

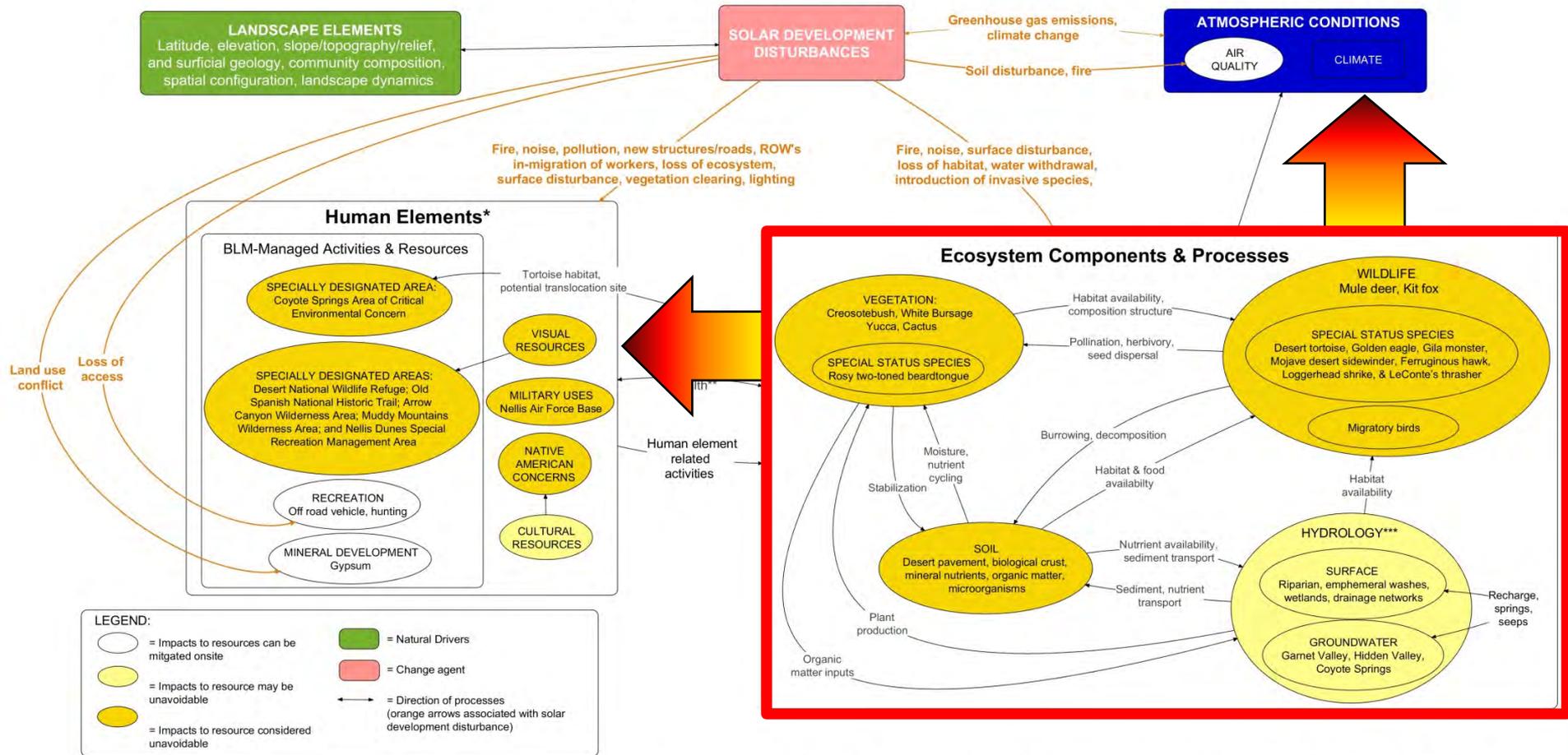
# Off-site Mitigation Criteria Resources Experiencing Unavoidable Impacts

Resource	Level of protection in law/policy?	Rarity	How resilient?	Importance in land-use plans?
Special Status Species – Animals	High	Very	Not very	Very
Special Status Species – Rosy Two-toned Beardtongue	Fairly high	Very	Not very	Very
Vegetation	Moderate	Common	Not very	Moderate
Wildlife	Moderate	Common	Somewhat	Moderate
Visual Resources	Moderate	50-50	Not very	Moderate

# Federal Land Policy and Management Act of 1976 (P.L. 94-579)

- Sec 102. (a) The Congress declares that it is the policy of the United States that –
  - (7) ...management be on the basis of multiple use and sustained yield...
- Sec 103. (c) The term ‘multiple use’ means –
  - ... harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment...

# Productivity of the Land & Quality of the Environment



\* Human Elements includes the human concerns and related resources for which impact evaluation was included in the Solar PEIS. These are activities and resources with (or requiring) human engagement in one of the following ways: 1) requires active participation in management of a resource or activity (e.g., lands and realty, specially designated areas, transportation, grazing, mineral development, recreation, military uses); 2) addresses the perspective or perception of a resource (e.g., visual resources, acoustics, lands with wilderness characteristics, cultural); and/or 3) addresses human-specific values (e.g., cultural resources, Native American concerns, socioeconomics, environmental justice).

\*\*Ecosystem health is referred to as the degree to which the integrity of the soil and the ecological processes of the ecosystem are sustained (BLM Handbook H-4180-1). Ecosystem health can influence Native American concerns, visual resources, specially designated areas, and recreation. Human elements can also influence ecosystem components (e.g. recreation can compact soils, hunting can impact species, etc.).

\*\*\*Unavoidable hydrologic impacts may occur due to changes in drainage and recharge patterns. Potential impacts to water availability will be mitigated on-site through the implementation of a net neutral use policy (water rights must be purchased).

# Unavoidable Impacts

## Yes

---

- Soils/Erosion
- Wildlife
- Special Status Species - Animals
- Vegetation
- Special Status Species - Vegetation

## Maybe

---

- Invasive/Noxious Weeds
- Hydrology
- Riparian
- Visual Resources
- Specially Designated Areas
- Military uses
- Cultural
- Native American Concerns

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Soils/ Erosion</b>	<p><b>Direct:</b> Soils in the SEZ likely to be impacted through compaction and erosion. Soil loss through sediment transport may occur. Loss of biotic soils and desert pavement.</p> <p><b>Indirect:</b> Increased runoff into the Dry Lake basin may result in soil/sediment transport. Increased wind erosion caused by grading (if needed). Soil contamination from spills could occur.</p> <p><b>Cumulative:</b> Solar energy development would be a major contributor to cumulative impacts on soil from foreseeable development in the region.</p>	n/a <sup>3</sup>	Require soil stabilization during construction and operation. Engineering options to minimize transport. Minimize the surface area that is graded and cleared of vegetation.	Yes	<b>Yes</b> – as a critical component of a functioning ecological system. Protection and/or restoration (off-site) will slow the regional decline in intact ecosystems in the region.
<b>Wildlife</b>	<p><b>Direct:</b> Loss of habitat and connectivity (linkages) for several species of reptiles, mammals, birds, and invertebrates. Possible night sky impacts for birds.</p> <p><b>Indirect:</b> Indirect impacts could occur from habitat loss or modification related to groundwater depletions, surface runoff, dust, noise, lighting, or accidental spills.</p> <p><b>Cumulative:</b> Cumulative impacts to wildlife would occur; however, contributions to cumulative impacts from solar facilities within the SEZ would be relatively small. Many of the species would still have extensive habitat available within the region.</p>	n/a	Avoiding construction during nesting season for migratory birds, minimize disruptions during lambing season.	Yes	<b>No (not directly).</b> Wildlife habitat comes with a functioning ecosystem. Thus, off-site mitigation to protect and/or restore intact ecosystems in the region will slow the regional decline in wildlife habitat.

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<p><b>Special Status Species - Animals</b></p>	<p><b>Direct:</b> Six BLM sensitive species are known to occur or likely to occur in the SEZ (Gila monster, Mojave Desert Sidewinder, Ferruginous Hawk, Golden Eagle, Loggerhead Shrike, and LeConte’s Thrasher), as well as the Federally-Threatened Mojave Desert Tortoise and migratory bird species protected under the MBTA. Loss of habitat and habitat connectivity (linkages) are the main concerns. Additional species may be identified within the SEZ through pre-disturbance surveys, for example, or outside of the SEZ, such as groundwater-dependent species, and would need to be addressed.</p> <p><b>Indirect:</b> Indirect impacts could occur from habitat loss or modification related to groundwater depletions, surface runoff, dust, noise, lighting, or accidental spills.</p> <p><b>Cumulative:</b> Solar energy development could be a contributor to cumulative impacts on some special status species (e.g., desert tortoise). Contributions to cumulative impacts owe to the large, continuous areas disturbed and disturbance from associated roads, transmission lines, and other infrastructure.</p>	<p>May be possible</p>	<p>Require construction only outside of migratory bird breeding season.</p> <p>Desert tortoise minimization measures include:</p> <p>translocation/relocation, project fencing, education programs, perch deterrents, trash program, authorized biologists/monitors on site during construction, clearance surveys, educational signs, minimizing ground disturbance, no pooling of water (dust control), cover holes and trenches when not in use.</p>	<p>Yes</p>	<p><b>Yes</b> where required by law; these Special Status Species are by definition ‘at risk’ and warrant off-site mitigation.</p> <p>Protection and/or restoration (off-site) of similar habitat will slow the regional decline in intact ecosystems in the region, thereby also benefitting other special status species.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Vegetation</b>	<p><b>Direct:</b> Development will adversely affect characteristic vegetation (e.g., creosotebush, white bursage, cactus, yucca) through destruction and loss of habitat.</p> <p><b>Indirect:</b> Loss of native vegetation due to dust deposition from construction and operations, increased surface water runoff and related erosion, or through the introduction of invasive species.</p> <p><b>Cumulative: Cumulative</b> impacts on primary cover species would be small due to their abundance in the region and the relatively small portion of total lands required for solar development.</p>	n/a	Possible to minimize disturbance of existing vegetation for some technologies. Salvage cactus and yucca prior to disturbance.	Yes	<b>Yes</b> – as a critical component of a functioning ecological system. Protection and/or restoration will slow the regional decline in intact ecosystems.

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<p><b>Special Status Species - Vegetation</b></p>	<p><b>Direct:</b> While seven special status species are known to occur in the region, only one is known to occur within the SEZ: the Rosy two-tone beardtongue (<i>Penstemon bicolor</i> spp. <i>roseus</i>). The other 6 species are the Las Vegas bearpoppy (<i>Arctomecon californica</i>), Beaver Dam breadroot (<i>Pediomelum castoreum</i>), threecorner milkvetch (<i>Astragalus geyeri</i> var. <i>triquetrus</i>), sticky buckwheat (<i>Eriogonum viscidulum</i>), Sticky ringstem (<i>Anulocaulis leiosolenus</i>), and white bearpoppy (<i>Arctomecon merriamii</i>)</p> <p>Development may result in a loss of plants and habitat. (Additional species may be identified within the SEZ through pre-disturbance surveys, for example, or outside of the SEZ, such as groundwater-dependent species, and would need to be addressed.) Impacts to species outside of but near the boundary of the SEZ should be considered.</p> <p><b>Indirect:</b> Indirect impacts to individuals and habitat could occur from groundwater depletions, surface runoff, dust, or accidental spills.</p> <p><b>Cumulative:</b> Solar energy development could contribute to cumulative impacts on some special status species (e.g., rosy two-tone beardtongue). Contributions to cumulative impacts owe to the large, continuous areas disturbed and disturbance from other infrastructure (e.g., roads, transmission lines).</p>	<p>May be possible</p>	<p>Salvage, seed banking, and pre-disturbance vegetation surveys</p>	<p>Yes</p>	<p><b>Yes</b> where required by law; these Special Status Species are by definition 'at risk' and warrant off-site mitigation.</p> <p>Protection and/or restoration (off-site) of similar habitat will slow the regional decline in intact ecosystems in the region, thereby also benefitting other special status species.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Visual Resources</b>	<p><b>Direct:</b> Development will adversely affect visual resources. The Solar PEIS identified moderate to strong visual impact to the following specially designated areas in the vicinity of the SEZ: Desert National Wildlife Refuge; Old Spanish National Historic Trail; Arrow Canyon WA; Muddy Mountains WA; and Nellis Dunes SRMA. Potential impact to night skies. There already is significant development in the SEZ resulting in existing visual impact.</p> <p><b>Indirect:</b> None identified.</p> <p><b>Cumulative:</b> Cumulative impacts to visual resources would occur.</p>	n/a	Required design features include measures to reduce visual contrast. Impacts to visual resources could be minimized through selection of technologies with low height facilities.	Yes	<b>Yes</b> – as a valued human element. Protection and/or restoration of ecosystem intactness will slow the regional decline in visual resource quality.

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Specially Designated Areas</b>	<p><b>Direct:</b> None - no specially designated areas (SDAs) within the SEZ.</p> <p><b>Indirect:</b> Moderate to strong visual contrasts would be experienced in several SDAs in the vicinity of the SEZ. These impacts could include adverse visual effects on the viewshed of these areas (including impacts on the night sky viewing), reduced recreation use, fragmentation of biologically linked areas, and loss of public access. The Coyote Springs ACEC is located to the west of the SEZ – Designated to protect desert tortoise habitat.</p> <p><b>Cumulative:</b> Increased development and visual clutter in general in the surrounding areas, reduced local and regional visibility due to construction-related air particulates, light pollution, road traffic, and impacts on wildlife and plants could cumulatively impact SDAs.</p> <p><b>Data Gaps:</b> Additional analysis may be required to determine if the Coyote Springs ACEC would be impacted by SEZ development.</p>	Some visual impacts avoidable if a height restriction is imposed.	Required design features minimize contrast, reducing impacts on surrounding SDAs.	Maybe (for impacts to tortoise at Coyote Springs ACEC from potential hydrology changes) Yes for visual impacts.	<p><b>Yes for ACEC.</b> Migration and or translocation of tortoises to the Coyote Springs ACEC will increase density, thus increasing mortality risk. On the ground mitigation measures, such as extending tortoise fencing along Highway 93, could minimize the risk.</p> <p><b>Unknown at this time for visual impacts.</b> On-site mitigation measures may be adequate for protecting the resource.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Military</b>	<p><b>Direct:</b> The SEZ is located under the path of military aircraft flying between Nellis Air Force Base (AFB) and the Nevada Test and Training Range. The SEZ is in an air force bailout zone. The Air Force has stated that glare, thermal effects, structure height of greater than 250 ft., lighting of structures, and transmission lines could adversely affect operations.</p> <p><b>Indirect:</b> None identified.</p> <p><b>Cumulative:</b> Cumulative impacts could occur from general development in the region because of general infringement on formerly wide-open spaces.</p>	n/a	Coordinate with military on a project-specific basis; impose height restrictions on development in the SEZ.	Yes	<p><b>No.</b> Mitigation of impacts to military operations must be handled on a project-specific basis; there is no effective regional mitigation approach.</p>
<b>Native American Concerns</b>	<p><b>Direct:</b> Consultation with the Southern Paiute Tribe has identified potential concerns with respect to the cultural importance of any loss of plant and/or animal species. Other issues may be identified through consultation with affected Tribes. There are Tribal concerns with water drawdown and its effect on the entire hydrologic system, including ultimate effect on plants and animals (see indirect). The Salt Song Trail and another spiritual trail may approach or pass through the SEZ and could experience direct disturbance, visual, and/or noise impacts.</p> <p><b>Indirect:</b> Impacts on the mesquite grove north of the SEZ if water availability and quality are reduced, and general habitat loss with vegetation clearing and water reduction that could affect species and ecosystem health.</p> <p><b>Cumulative:</b> Overall impacts to the regional landscape and ecosystem health.</p>	To be determined through government-to-government consultation.	To be determined through government-to-government consultation.	Yes (for hydrology impacts of non-PV technologies and for habitat loss)	<p><b>Unknown at this time.</b> BLM resource specialists conclude that impacts to hydrology and habitat can be adequately mitigated on and off-site. However, consultation will determine whether mitigation for Native American Concerns is warranted.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Invasive/ Noxious Weeds</b>	<p><b>Direct:</b> Development may alter soils and vegetation communities and result in the establishment of noxious weeds.</p> <p><b>Indirect:</b> None identified.</p> <p><b>Cumulative:</b> Cumulative impacts from establishment of weeds could occur with multiple developments in the region; contributions from solar facilities within the SEZ likely to be relatively small.</p>	<p>Avoid travel through weed-infested areas; inspect and clean vehicles and equipment to avoid spread of weeds; limit ground disturbance, avoid creating soil conditions that promote weed germination and establishment, dispose of seed and plant parts.</p>	<p>Minimize impacts through development of a Weed Management Plan; use weed-free seed to support re-vegetation efforts.</p>	<p>Maybe</p>	<p><b>No.</b> On-site mitigation measures were determined to be adequate for protecting against the establishment and/or spread of invasive and/or noxious weeds. Further, the protection and/or restoration of intact ecosystems (off-site) will slow the decline in the spread of invasive and/or noxious weeds in the region.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<p><b>Hydrology (Water/Watershed / Water Quality)</b></p>	<p><b>Direct:</b> Groundwater withdrawals for development may cause declines in groundwater elevations that can impact water availability for surface water features, vegetation, ecological habitats, regional groundwater flow paths, and other groundwater users in the basin.</p> <p>Development may alter ephemeral stream channels that can impact flooding and debris flows during storms, groundwater recharge, ecological habitats, and riparian vegetation communities. A hydrologic basin model has been completed, showing that the water is over-allocated, but not over-pumped at this time. New withdrawals within the basin could result in the impacts listed above. Impacts to recharge expected to be minimal because the recharge occurs in the mountains that surround basin. Better understanding of groundwater conditions and threshold for impacts could be an incentive for development.</p> <p><b>Indirect:</b> None identified.</p> <p><b>Cumulative:</b> Impacts will be constrained by the limited availability of water rights, and via oversight by state and local water authorities. Large drawdowns due to solar energy demands are not expected given state and local oversight of groundwater supplies and fully allocated supplies in most regions. However, pressure on water supplies will continue to grow from multiple demands.</p>	n/a	<p>Impacts related to water consumption could be minimized through selection of technologies with low water requirements. Impacts to on-site recharge can be mitigated with engineered facilities such as detention basins to allow infiltration to occur. Required measures should also minimize sheet flow.</p>	Maybe	<p><b>Groundwater-No.</b> BLM will review all applications to validate net neutral water use (i.e. groundwater purchased from holders of currently-used existing senior water rights)</p> <p><b>Surface Hydrology-No (not directly).</b> While there may be impacts to surface hydrology, protection and/or restoration of intact ecosystems (off-site) will slow the regional decline in unaltered ephemeral stream channels and the associated impacts.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Riparian</b>	<p><b>Direct:</b> Development may alter ephemeral stream channels that can impact flooding and debris flows during storms, groundwater recharge, ecological habitats, and riparian vegetation communities. Reductions to the connectivity of these areas with existing surface waters and groundwater could limit water availability and thus alter the ability of the area to support vegetation and aquatic species. Reduced overall stability of the natural landscape.</p> <p><b>Indirect:</b> None identified.</p> <p><b>Cumulative:</b> Cumulative impacts to riparian areas could occur with multiple developments in the region; contributions from solar facilities within the SEZ likely to be relatively small.</p>	Prohibit development in major washes	Require engineering controls on surface water runoff/erosion	Maybe	<p><b>No (not directly).</b> While there may be impacts to riparian systems, protection and/or restoration of intact ecosystems (off-site) will slow the regional decline in intact riparian systems.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation

Resource/Issue	Impacts	On-site Mitigation		Unavoidable Impacts?	Warrant Off-site Mitigation?
		Avoidance	Minimization		
<b>Cultural</b>	<p><b>Direct:</b> Development may adversely affect cultural resources. Although surveys have not been completed, most known sites are not eligible; BLM does not expect many newly discovered sites to be eligible. Mormon Road/Old Spanish Trail is eligible and goes through the SEZ, but it is not the Congressional National Historic Trail route. A trail with spiritual significance, if in the SEZ, may be impacted by an existing road network.</p> <p><b>Indirect:</b> Erosion impacts on the cultural landscape outside of the SEZ resulting from land disturbances and modified hydrologic patterns; increased accessibility and potential for damage to eligible sites outside of the SEZ (if present).</p> <p><b>Cumulative:</b> None expected, but dependent on whether any eligible sites are found and impacted in the SEZ.</p> <p><b>Data Gaps:</b> Cultural inventory and evaluation to be completed.</p>	<p>Conduct pre-development surveys. If eligible sites are discovered, it is likely that impacts could be avoided or mitigated on-site.</p> <p>Prohibit development on the Old Spanish Trail/Mormon Road.</p>	<p>Require surveys before ground disturbing activities. Develop and execute a Memorandum of Agreement (MOA) if eligible sites are discovered within the SEZ.</p>	Maybe	<p><b>No.</b> Risk of resource loss is low. On-site mitigation measures were determined to be adequate for addressing known cultural resources. Implementing the required protection measures as established in the MOA may result in off-site mitigation measures if significant resource values are discovered during the pre-development survey.</p>

# Unavoidable Impacts that Warrant Off-site Mitigation



Loss of species and habitat - Special Status Species – Animals



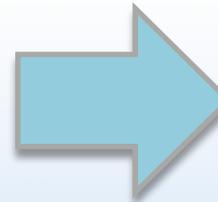
Loss of species and habitat - Special Status Species - Plants



Impact to Coyote Springs ACEC (Specially Designated Area)



Loss of intact ecosystems



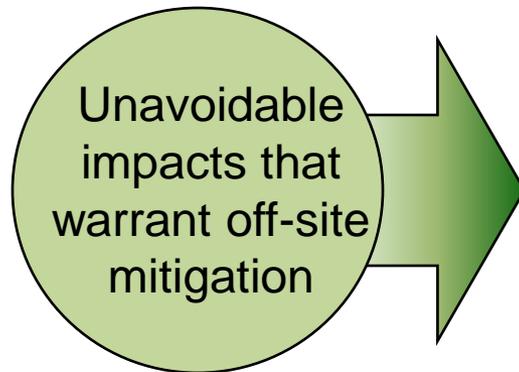
- Vegetation
- Soils
- Wildlife
- Hydrology
- Riparian
- Invasive/Noxious Weeds
- Visual Resources

# How much off-site mitigation?

## Considerations – Dry Lake SEZ

- Already altered landscape conditions within and adjacent
- Not identified as an area with high conservation values
- Some transmission infrastructure in place
- Proximity to demand
- Proposed use has a positive ecological impact (offsets greenhouse gas emissions)

# What Next?



- Mitigation objectives
- Fee structure
- Mitigation actions
- Monitoring scheme



# Establishing Regional Mitigation Perspectives

## BLM Southern Nevada District (SNDO) Perspective

Fred Edwards

Botanist, Forestry and Range Program Lead,  
Southern Nevada District

Dry Lake Workshop 3  
1/30/2013



# BLM Must Comply with Mojave Desert Biological Constraints



White Margined Penstemon  
(*Penstemon albomarginatus*)

- Extremely slow pace of natural recovery
- Finite ecosystem capacity
- Reduction in resilience caused by non native species, fire, and anthropogenic activities
- Uncertainty regarding ecosystem resilience to climate change



# BLM Must Comply with Existing Regulations, Policy, and Guidance

Some Examples:

- **Federal Land Policy Management Act (FLPMA)**
- National Environmental Policy Act (NEPA)
- Endangered Species Act (ESA)
- **Resource Management Plan (RMP)**
- BLM Forestry Regulations (cactus and yucca salvage)
- BLM Manual 6840 (Special Status Species Management)
- BLM Integrated Vegetation Management Handbook



# BLM Must Fulfill The FLPMA Multiple Use Mandate

Sec. 103. [43 U.S.C. 1702] c) :

The term “multiple use” means the management of the public lands and their various resource values so that they are utilized in the combination that

→ **will best meet the present and future needs of the American people**; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a

combination of balanced and diverse resource uses that **takes into account**

→ **the long-term needs of future generations for renewable and non-renewable resources**, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources

**without permanent impairment of the productivity of the land and the quality of the environment with consideration**

→ **being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.**

# SNDO Must Comply With Its Resource Management Plan (RMP)

- There are 8 RMP management objectives relevant to Dry Lake SEZ off site mitigation
- These cover 5 different program areas:
  - Vegetation Management
  - Soil Management
  - ACEC Management
  - Fish and Wildlife Management
  - Special Status Species Management



# RMP Objectives Relevant to SEZ off-site mitigation

## Vegetation Management

- **VG-1** Maintain or improve the condition of vegetation on public lands.
- **VG-2** Restore plant productivity on disturbed areas of the public lands.



# RMP Objectives Relevant to SEZ off-site mitigation

## Soil Management

- **SL-1 Reduce erosion and sedimentation while maintaining or where possible enhancing soil productivity.**
- **SL-1-a** On watersheds that exhibit good potential for recovery **implement protective measures.**



# RMP Objectives Relevant to SEZ off-site mitigation

## Areas of Critical Environmental Concern

- **AC-1 ... Maintain functional corridors of habitat** between ACECs to increase the chance of long-term persistence of desert tortoise.



# RMP Objectives Relevant to SEZ off-site mitigation

## Fish and Wildlife

- **FW-3 Support viable and diverse native wildlife populations by providing and maintaining sufficient quality and quantity of food, water, cover and space to satisfy needs of wildlife species using habitats on public lands.**



# RMP Objectives Relevant to SEZ off-site mitigation

## Special Status Species Management

- **SS-2 ... Manage habitats** for non-listed special status species to support viable populations **so that future listing would not be necessary.**
- **SS-3-a-i Require reclamation of disturbed lands** resulting from activities that result in loss or degradation of tortoise habitat.



Rosy two-toned penstemon  
(*P. bicolor ssp roseus*)



# Some Other Considerations During NEPA

- Change from Multiple Use to Single Use
- Displacement of other multiple use activities to adjacent BLM lands
- Cumulative impacts to BLM managed resources



Las Vegas bearpoppy  
(*Arctomecon californica*)

# Standards, rules, or tests as the basis for establishing regional mitigation objectives ?

- How well does the proposed mitigation meet the BLM mission under FLPMA.
- How well does the proposed mitigation meet BLM RMP responsibilities



Ash Meadows  
milkvetch



# Process suggestions for establishing regional mitigation objectives

- Proposed mitigation should be simple, practical, understandable, and defensible
- Proposed mitigation should address direct, indirect and cumulative impacts to ecosystem services and values
- Wherever possible mitigation should integrate multiple resources
- Proposed mitigation should be fair and equitable



# Regional mitigation factors to incentivize development in the SEZ and disincentivized outside the SEZ



OR



# Thank You!



Southern Nevada District / Las Vegas Field Office

**BLM**





# Establishing Regional Mitigation Objectives for Solar Energy Zones

U.S. Fish and Wildlife Service Perspective

**Brian A. Novosak**

Nevada Office

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Nevada - The Silver State

# Multiple use management considerations

- recognize change from “multiple use” to “single use”
- ensure that land actions undertaken by others for conservation are not adversely affected



# Standards, rules, and tests for establishing regional mitigation objectives

- **Standards:**

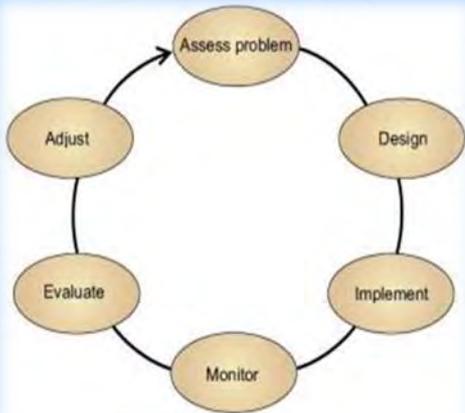
- protect, restore, enhance
  - protection of ecosystems
  - no net loss
  - recovery of listed species

- **Rules:**

- Transparent and reasonable

- **Tests:**

- Effectiveness monitoring



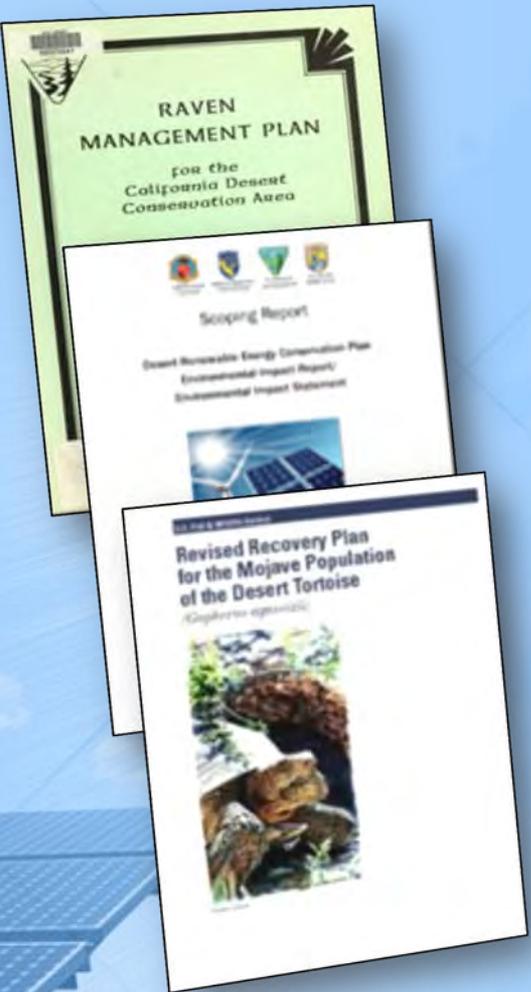
# Cost factors to incentivize development in SEZ

- Incentive is having a “shovel ready” zone
- Shovel ready = environmental reviews completed (NEPA, ESA, Cultural) and mitigation projects wishlist developed
- Cost should be less than mitigation costs and environmental permitting costs on variance lands



# Documents to inform regional mitigation objectives

- Land Use Plans—BLM; FWS; NPS; USFS; USAF; Tribal, State, County; City
- State wildlife action plans—Nev. Dept. of Wildlife
- FWS species recovery plans—desert tortoise recovery plan and recovery action plan
- Habitat conservation plans—Clark Co. multi species HCP ; southern Cal. desert renewable energy conservation plan
- Special status species management plans



## RAVEN MANAGEMENT PLAN for the California Desert Conservation Area

### Scoping Report

Desert Renewable Energy Conservation Plan  
Environmental Impact Report  
Environmental Impact Statement



### Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*)



**Brian A. Novosak**  
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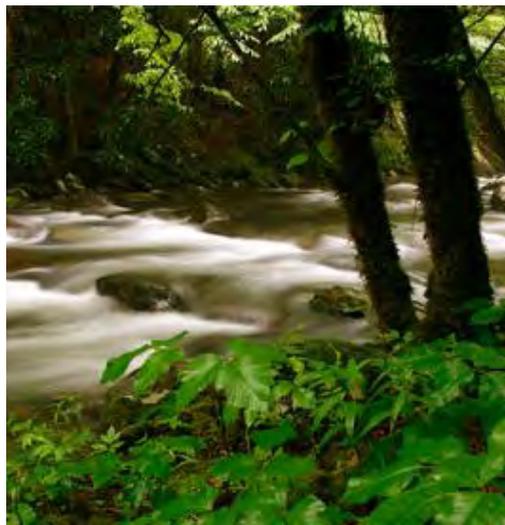




# Dry Lake SEZ – Establishing Regional Mitigation Objectives

Dry Lake SEZ Workshop || January 30, 2013

Alex Daue  
The Wilderness Society



# First Principles

- Mitigation hierarchy should be followed (avoid, minimize, mitigate)
  - Guiding development to SEZs helps a lot with avoidance
  - There may be opportunities for avoidance even within a SEZ (especially other SEZs like Riverside East)
  - Pursue opportunities for minimization wherever possible

# First Principles

- Guided development model must be supported – mitigation objectives should help (or at a minimum not hinder) efforts to incentivize development in SEZs
- Mitigation must account for and address the full range of resources and values, including lands with wilderness characteristics

# General requirements for successful mitigation efforts

- Mitigate for specific impacts onsite and cumulative impacts
- Provide additive, measurable gains for the resource/value in question
- Durable: in designation; in management; in funding
- Include authority and process for monitoring and adaptive management
- Fully funded, including funding for monitoring and adaptive management



## Key points

- Mitigation should account for full range of impacted resources and values, including lands with wilderness characteristics (LWC)
- Options for mitigating for impacts to LWC include
  - Acquiring and protecting additional LWC
  - Conducting wilderness restoration
  - Collecting funds for a “wilderness mitigation bank” to fund the activities above
  - Changing management to protect LWC in the same BLM field office or region that are currently unprotected

# Contact information

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# Haiku

- What mitigation?
  - Regionally -- not siloed.
  - Can it be done?
  - 
  - 
  - Dry Lake SEZ planning
  - Valuable expertise here!
  - Pilot project fun!
  - 
  - 
  - Flowchart the process,
  - Thresholds and criteria
  - Will serve us all best.
  - 
  - 
  - So many issues.
  - What is the bottom line here?
  - Time and money rule.
  - 
  - 
  - Energy for the people
  - The land will provide.
  - Our best wisdom must pavilion.
- Sun floats over sky.
  - A daiiy run: energy!
  - Let's work together.