ARIZONA'S CONSERVATION DISTRICTS

District Conservation Action Plans

Arizona’s Conservation Districts
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Part 2

CHAPTER 2
RESOURCE CONCERNS

A general analysis of the kind, extent, severity, causes, and effects of resource concerns in the District

Focus on resource concerns, not specific practices or treatments that may be needed or planned.

The purpose is to **identify the resource problems that exist or may exist**, what caused the problems, how severe they are, and what are the effects of the problems if not addressed.

This chapter is **organized around the resource concerns list used by the NRCS**. The list includes major categories of soil, water, air, plants, animals, and energy. Each of the main categories is divided into a number of specific concerns.

For the District plans, only those resource concerns that are most important in Arizona are used here. If there are additional concerns they can be added as needed or suggested by cooperators and stakeholders.

Plant Resource Concerns
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Wildfire hazard from biomass accumulation

Water Resource Concerns
- Groundwater depletion
- Naturally available moisture use
- Inefficient irrigation water use

Soil Resource Concerns
- Sheet and Rill Erosion
- Classic Gully Erosion
- Wind Erosion
- Concentration of Salts and Other Chemicals

Air Resource Concerns
- Emissions of particulate matter (PM) and PM precursors

Animal Resource Concerns
- Terrestrial habitat for wildlife and invertebrates
- Inadequate livestock water quantity, quality and distribution

Energy Resource Concerns
- Energy efficiency of equipment and facilities
- Energy efficiency of field operations

HOW TO START

Contact local stakeholders to get input on their resource concerns. Invite them to a meeting or send out a questionnaire, or both. Explain what you are doing and why you want their advice.

Request information on resource concerns from member of your Local Work Group, e.g., land management or wildlife agencies, etc. Ask them to provide documents that identify their concerns and/or maps and surveys that document watershed conditions, range health, soil erosion, wildlife habitat quality, wildlife population trends, water quality, etc.

Request ranchers and farmers to identify problems on their operations. You can send them a questionnaire, or, preferably, visit with them and fill out the questionnaire together. This can include marking problem areas on maps of the ranch or farm.

Organize the information gathered by each resource concern on the list. This will help identify the most important concerns to be addressed in this chapter and it will also help identify where additional information is needed.

SAMPLE PRODUCER QUESTIONAIRE

Name: _____**Name of Ranch/Farm:**_____

Telephone/email:_____**Address:**_____

USFS/BLM Allotment Names:_____

State Grazing or Agricultural Lease Numbers:_____

Watersheds:_____

Type of Operation: (Cow-calf, steer, sheep, farm etc.)

Management (Describe grazing and/or crop management system.

Do you have a management plan developed with NRCS, BLM, or other entity?

Do you rotate grazing among pastures, or leave livestock in pastures year-round?

Crops produced.

RESOURCE CONCERNS

(Refer to list of resource concerns and applicable practices provided)

(Locate all concerns on map if possible)

1. **Insufficient Water**
   a. Is there excessive loss of water through runoff and flooding?
   b. Is there excessive use of water by vegetation resulting in lower stream flows, dry springs and wells, etc.?
      i. If yes describe the problem.
         1. What kind of vegetation?
         2. Where are the springs and wells and when did they dry up?
         3. Where is excessive runoff?
         4. What causes it?

      ii. What practices do you think would be necessary to correct the problems?

      iii. Is there loss or inefficient use of irrigation water? (due to seepage, poor water distribution, excessive tail water, etc.) If so, Describe the nature of the problem.

      iv. Practice(s) need to be implemented to correct it.

2. **Degraded Plant Condition**
   a. Changes in plant composition, e.g., decreased cover of desirable grasses, increased annual grasses and weeds, increase in shrub/tree cover, poisonous plants, invasive species, etc.?
      i. Describe the problem – what changes have occurred and what is the result?
      ii. What practices would be best to correct the problems?
   b. Plant production – describe problems associated with fertility, insects, disease, soil salinity or other factors affecting crop yields and quality.

3. **Soil Erosion**
    a) Sheet/Rill Erosion? (occurs on upland slopes)
    b) Gully Erosion? (occurs in defined channels)
    c) Bank Erosion? (occurs along sides of streams)
        i. Are there areas where erosion is a concern? What type?
        ii. What is causing the erosion? (reduced ground cover, roads, off road travel, etc.)
        iii. What practice(s) is needed to correct the problem(s)
4. **Livestock Production**
    a) Distribution/Forage/Water for Livestock
        i. Are there areas which lack sufficient amounts or reliability of water to allow for good distribution of livestock? Where? (Locate on map)
        ii. Are there areas which lack sufficient amounts or reliability of water to allow rotational grazing, i.e., increased numbers of animals for shorter periods of time? Where? (Locate on map)
        iii. What practices are needed to correct the problems above? (well, storage, troughs, pipelines, etc.).
    b) Describe any other factors affecting livestock production, e.g., insects, disease, predators, etc.
5. **Fish and Wildlife Habitat**
    a) Food Sources, Nesting or Hiding Cover, Water Temperature, etc.
        i. Are there areas on your ranch or farm where you think fish or wildlife habitat is degraded or could be improved?
        ii. Are riparian areas in good condition? Describe.
        iii. Describe the problem(s) and locate on map where they exist.
        iv. What practices might help improve habitat?
    b) Other "wildlife" issues. Do you have a problem with "wild" burros or predators?
        i. Describe the problem. Locate on map
6. **Inefficient Energy Use**
    7. Are there ways to improve efficiency? (i.e., reduce costs of energy use by reducing water pumping costs, improving roads, etc.)
8. **Other Concerns** (Are any of the remaining resource concerns an issue on you ranch?
    a) Which ones?
    b) Describe.

FOR EACH RESOURCE CONCERN

DOCUMENT AND DISCUSS THE FOLLOWING ISSUES

1. **What is the concern and what caused it?** This will mainly be a review of the scientific or other information that describes the problems and its causes.
2. **What are the actual or potential effects?** This can include effects on related concerns, such as water quality or erosion, or its economic or public safety effects.
3. **Where does the concern exist?**
4. **How severe is the present situation?**
5. **Is it getting worse or improving?**
6. **How many acres (or miles, feet, etc.) are affected?**

SOURCES OF INFORMATION

There are several ways to obtain information to use in Chapter 2. Any or all of these may be useful for the plan, depending what is available and its reliability.

1. **Maps and documents** are available from land management agencies or other state, federal, county government or NGOs, or obtained from your stakeholders and cooperators.
2. **Surveys and assessments** conducted by the District to document resource concerns across all land ownerships using a consistent methodology.
3. **Projections of potential resource concerns** are based on soil surveys, remotely sensed data, etc.

SUMMARY TABLE FOR RESOURCE ASSESSMENT FOR REDINGTON NRCD

Appendix B. Northeast Quadrant Upland Data Summary															
Map Delineation	MLRA	Map Unit	Observation Number	Ecological Site	Elevation	Slope	NRCS % Shrub	Historic Veg	Observed % Shrub	Present Veg	Prescribed Fire Priority	Observed % Bare Soil	SSR	Erosion Priority	Total Acreage
1	41-1	P/O Mtns	ND	Ponderosa Pine	5000+	30+	N/A	woodland	70	woodland	H	10	26		
				Representative Data				woodland		woodland	H		>25	L	17670
2	41-3	VH	V3-21	Volcanic Hills	4399	40+	20	grassland	40	shrub/grassland	M	10	24	L	
			V3-06	Limestone Hills (incl)	4220	10-20	30	shrub/grassland	65	shrubland	M	10	20	L	
				Representative Data				grassland		shrub/grassland	M		24	L	25242
3	41-3	VH/LiH/LiS	V3-12	Volcanic Hills	4260	10-40	20	grassland	80	shrubland	M	15	22	L	
			V3-12A	Volcanic Hills (Burned)	4260	10-40	20	grassland	70	shrubland	M	10	22	L	
			V3-04	Volcanic Hills	4133	0-75	20	grassland	70	shrubland	M	10	24	L	
			V3-13	Limestone Hills	4044	3-60	30	shrub/grassland	85	shrubland	M	20	15	L	
				Representative Data				grassland		shrubland	M		23	L	5370
4	41-3	VH/LiH/LiS	V3-05	Volcanic Hills	4174	5-25	20	grassland	90	shrubland	M	15	16	L	
			V3-03	Volcanic Hills	3996	10-100	20	grassland	60	shrubland	M	5	24	L	
				Representative Data				grassland		shrubland	M		20	L	3475
5	41-3	LiU	V3-11	Limy Upland	4151	1	70	shrubland	95	shrubland	N	20	18	L	
				Representative Data				shrubland		shrubland	N		18	L	624
6	41-3	LiS	V3-08	Limy Slopes	3976	15-30	30	shrub/grassland	85	shrubland	M	10	15	M	
				Representative Data				shrub/grassland		shrubland	M		15	M	3002
7	41-3	LiS	ND	Limy Slopes			30	shrub/grassland	nd	shrubland	M			M	
				Representative Data				shrub/grassland		shrubland	M		15	M	1267
8	41-3	LiS	V3-07	Limy Slopes	3820	80-100	30	shrub/grassland	80	shrubland	M	10	16	M	
				Representative Data				shrub/grassland		shrubland	M		16	M	870
9	40-1	LiS	V3-10	Limy Slopes	3443	2-10	55	shrubland	85	shrubland	N	10	18	L	
			V3-09	Limy Upland	3596	1-5	90	shrubland	90	shrubland	N	15	22	L	
				Representative Data				shrubland		shrubland	N		18	L	3770
10	40-1	LoU	ND	Loamy Upland			40	shrub/grassland	nd					H	
				Representative Data				shrub/grassland		shrubland	L		20	H	194
11	40-1	LiS/Breaks	ND			20-Vert.	55	shrubland	nd					L	
				Representative Data				shrubland		shrubland	N		<21	L	1683
12	40-1	SB	V3-01	Sandy Bottom	3155	0-1	30	shrub/grassland	90	shrubland		40	23	L	
				Representative Data				shrub/grassland		shrubland	L		23	L	347
13	40-1	LiS	V3-02	Limy Slopes	3482	15-40	55	shrubland	90	shrubland		15	22	L	
				Representative Data				shrubland		shrubland	N		22	L	1216
14	40-1	LiS/Breaks	ND			20-Vert.	55	shrubland	nd					L	
				Representative Data				shrubland		shrubland	N		<21	L	3558
15	40-1	LoH	ND	Loamy Hills			55	shrubland	nd					H	
				Representative Data				shrubland		shrubland	N		21	H	4992
16	41-3	LoH	ND	Loamy Hills			30	shrub/grassland	nd					H	
				Representative Data				shrub/grassland		shrubland	M		21	H	3501
17	41-3	LiS	ND	Limy Slopes			30	shrub/grassland	nd					M	
				Representative Data				shrub/grassland		shrubland	M		21	M	1562
18	40-1	SB	V3-14	Sandy Bottom	2925	1	30	shrub/grassland	95	shrubland		55	23	L	
				Representative Data				shrub/grassland		shrubland	L		23	L	396
19	40-1	LoU	V3-19	Loamy Upland	3051	1-2	40	shrub/grassland	80	shrubland		65	20	H	
				Representative Data				shrub/grassland		shrubland	L		20	H	1555

In the following slides the kinds of information needed for each resource concern will be discussed.

Many of the Districts in Arizona are mainly composed of range and/or forest lands, with minor amounts of farmland. In these Districts, plant concerns are most important because many of the other concerns are the result of changes in the species composition and/or structure of vegetation on rangelands.

In other Districts the most important land use is farming. Although some of these "farm districts" include large rangeland areas, most of them are located in the lower rainfall zones where rangeland treatments are limited. So, their primary focus is on farmland. Therefore, resource concerns and their relative importance may vary among Districts and the plans should be structured to reflect that.

PLANT RESOURCE CONCERNS

Plant productivity and health

On farmland this may relate to fertility, disease, etc. (i.e., crop production).

On rangelands this discussion may be combined with the next plant concern, since they are highly interrelated.

Plant structure and composition

This is the main problem on rangeland. Include discussion of changes in composition and structure for each major vegetation type. If good range condition or trend data available use it. Put in maps of veg types historic and existing, acreages, etc.

Plant pest pressure

Describe invasive species, weeds, insects, burros, etc. Include maps of occurrences if available.

Wildfire hazard from biomass accumulation

Describe how wildfire hazard has increased and causes. If info on fire regimes is available include it. Also, fire risk maps.

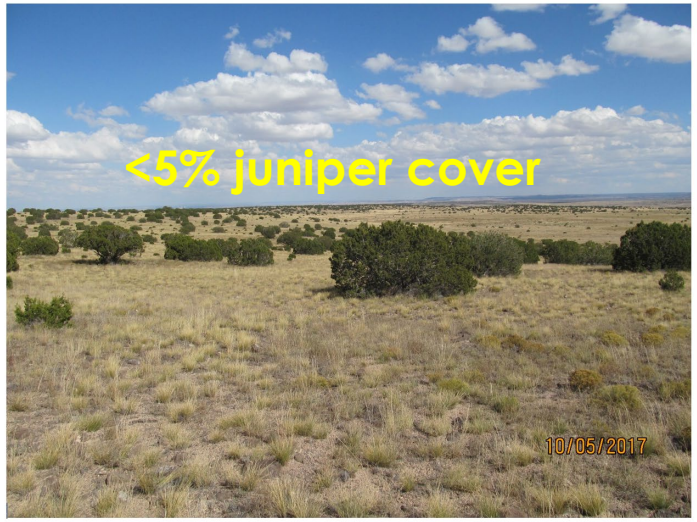


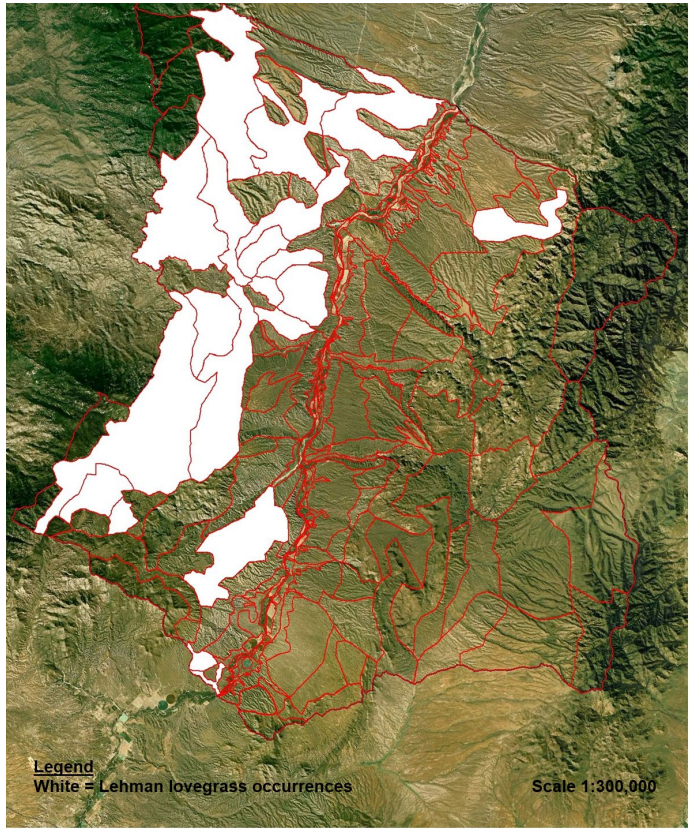
Figure 1 Phase1 - Estimated canopy cover less than 5%, little or no effect on understory

Figure 2 Phase II – Estimated canopy cover 10-15%. Transect measured canopy frequency at 18% but this includes some overlapping canopies so it is higher than actual cover. This level of cover has a moderate impact on understory.

Figure 4 Phase III – Estimated canopy cover 50%. Understory is virtually non existent. This photo was not taken on the proposed treatment areas, but was nearby. It shows what the end result of juniper invasion and/or infilling looks like. At this point, clearing juniper would leave virtually no cover and reseeding would probably be necessary.

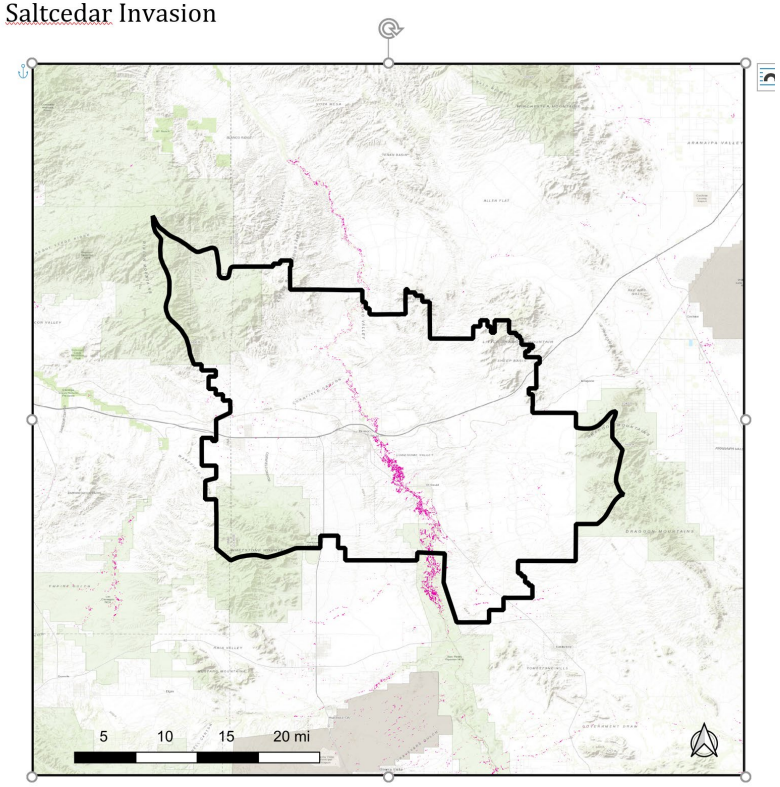
Left photo – Juniper roots suppress grass beyond the canopy.

Right photo – The end result, on some soils at least, if juniper not checked.



Areas mapped as having Lehmann Lovegrass in Redington NRCD in 2005

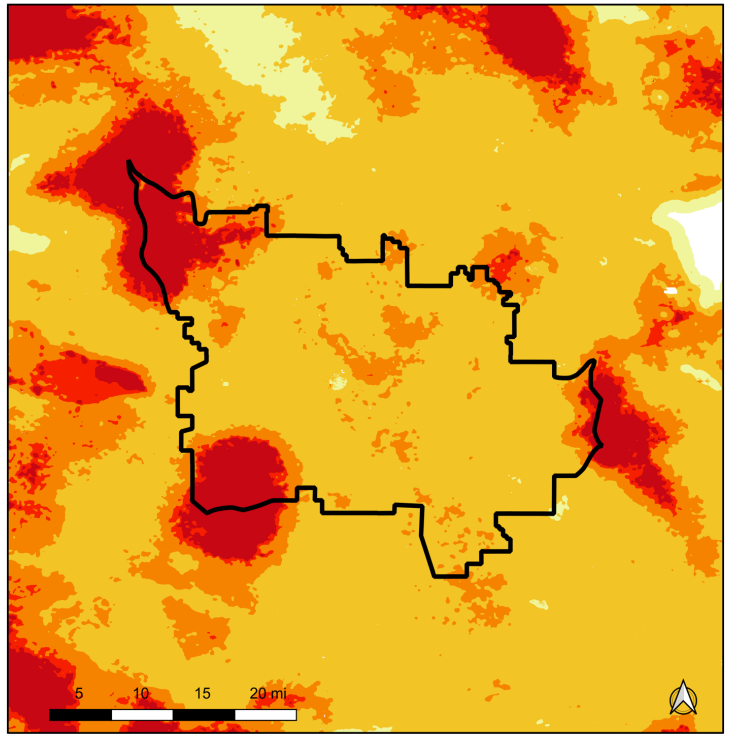
Saltcedar Invasion



Existing Saltcedar, classified as LANDFIRE Interior West Ruderal Riparian Forest and Interior West Ruderal Riparian Scrub Existing Vegetation types.

Areas having significant saltcedar invasion as mapped by Landfire in San Pedro NRCD – from ConserveAZ Portal

Wildfire Risk



Wildfire risk is a measure that integrates wildfire likelihood and intensity with generalized consequences to a home on every pixel. For every place on the landscape, it poses the hypothetical question, "What would be the relative risk to a house if one existed here?"

Areas classified by risk of wildfires in San Pedro NRCD

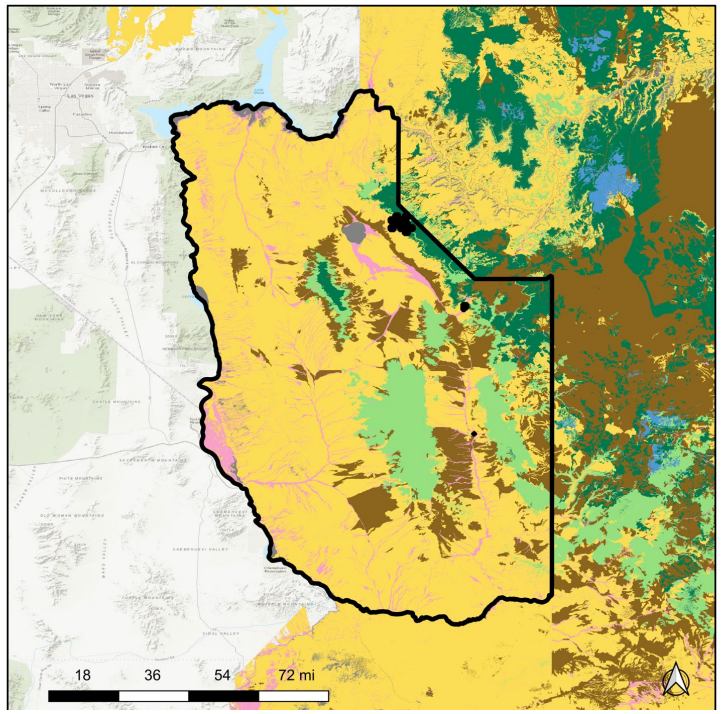
EXAMPLE OF DESCRIPTION OF VEGETATION TYPES

Semi-Desert Grassland

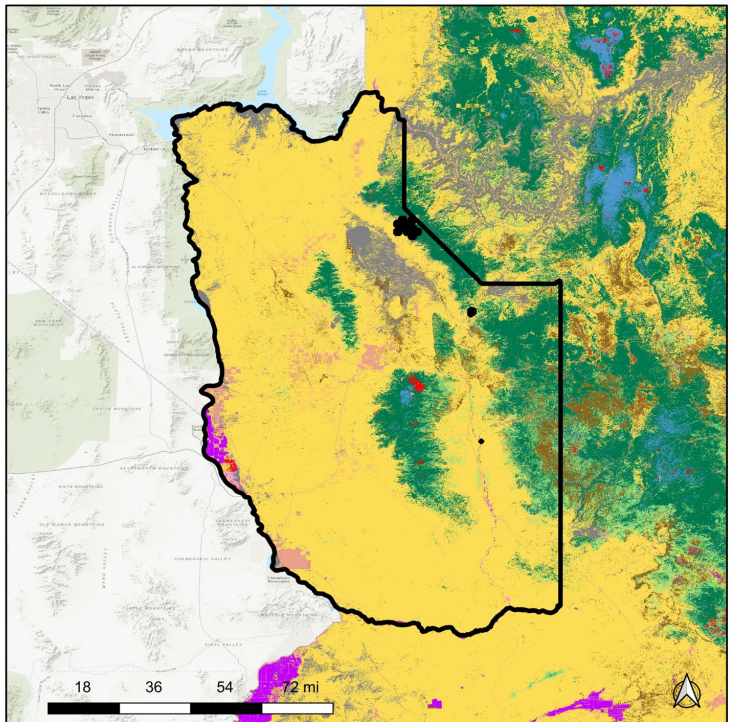
1. Location and description of major species or life forms in relation to soils, topography, etc.
2. Describe changes in the species composition and/or life forms that result from excessive grazing, drought, fire regime, etc. Document this with scientific and professional references.
3. Describe in general terms the effects such changes may have on various resources and processes, e.g., soil erosion, water yield, carrying capacity, fire intensity, etc.

EXAMPLE OF MAP OF HISTORIC VEGETATION, EXISTING VEGETATION, AND CHANGES IN VEGETATION
BIG SANDY NRCD

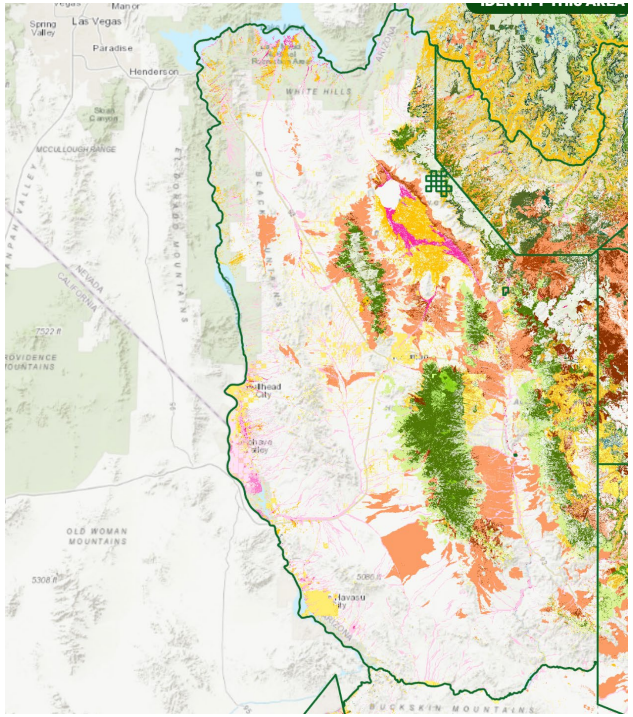
Historic Vegetation Formations



Existing Vegetation Formations



Vegetation Change



DATA ON ACREAGE OF MAJOR VEGETATION CHANGES FOR BIG SANDY NRCD

Table 2-4 Summary of vegetation changes in Big Sandy NRCD from historic to existing

Vegetation Formation	Historic Acres	Historic %	Existing Acres	Existing %	Change in Acres
Chaparral	522,751	11%	204,667	4%	-318,084
Cropland	-	0%	20,082	0%	20,082
Desertscrub	3,174,112	64%	3,540,738	72%	366,626
Developed	-	0%	136,150	3%	136,150
Forest	125	0%	7,866	0%	7,741
Grassland	644,779	13%	151,968	3%	-492,811
Riparian	320,958	7%	19,684	0%	-301,214
Ruderal and Recently Disturbed	-	0%	9,476	0%	9,476
Shrubland	11	0%	236	0%	225
Sparse or Barren	79,406	2%	271,202	6%	191,796
Woodland	182,756	4%	562,826	11%	380,070
Total	**4,924,897**		**4,924,897**		

NRCS RANGE CONDITION DATA FOR PRIVATE AND STATE LANDS IN REDINGTON NRCD

Table 8. Acres mapped (and percentages of each) in different similarity index classes in different MLRAs on private and state lands in the Lower San Pedro watershed project area by the NRCS.

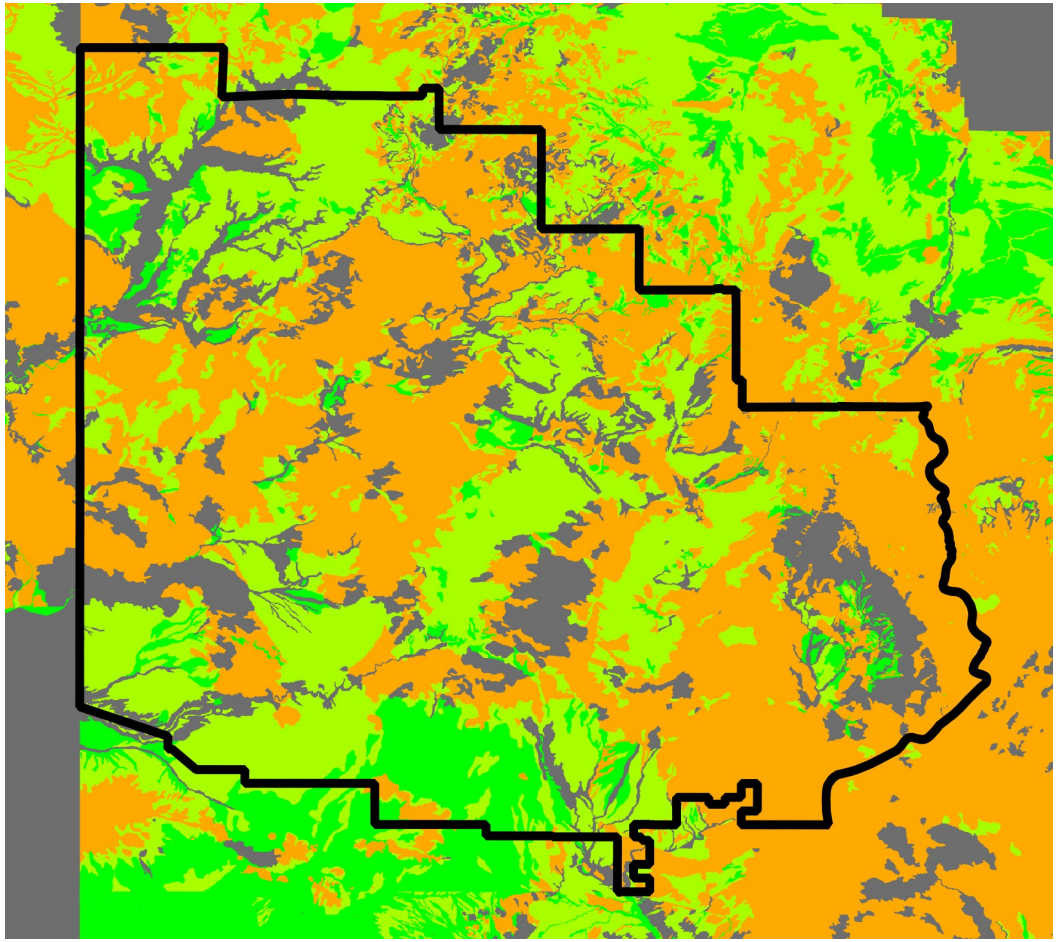
MLRA	Low	Moderate	High	Very High	Total
	0-25%	26-50%	51-75%	75% +	
40-1	2028	32330	42292	2389	79139
	3%	41%	53%	3%	100%
41-2	9285	4010	0	0	13295
	70%	30%	0%	0%	100%
41-3	2754	79644	80447	5738	168583
	2%	47%	48%	3%	100%
41-1	1781	7875	4314	0	13970
	7%	53%	36%	4%	100%
Total	15848	123859	84803	8127	232637
	7%	53%	36%	4%	100%

SOIL RESOURCE CONCERNS

- Sheet and Rill Erosion
- Classic Gully Erosion
- Wind Erosion
- Concentration of Salts and Other Chemicals

Examples of gully erosion and erosion caused by poor road construction

Information on soil concerns can be obtained from actual surveys, or from soil interpretations from the SSURGO data base.



Erosion Hazard (Road, Trail) (Dominant Component)

Values in the below table are grouped by Erosion Hazard (Road, Trail) (Dominant Component).

	Total Acres	Source Acres Percent
Severe	665,017	45%
Moderate	446,019	30%
Not rated	257,675	17%
Slight	105,915	7%
Total	1,474,625	100%

Map of Erosion Hazard by Road and Trail for the Triangle NRCD. This map was downloaded from the ConserveAZ Portal. The table shows the acreage of each erosion hazard category. This does not tell whether erosion is actually occurring but does indicate where the potential for erosion due to roads and trails exists.

WATER RESOURCE CONCERNS

Groundwater depletion

Describe groundwater hydrology, aquifers, recharge, water use, projections of use, etc.

Naturally available moisture use

Is rainfall and streamflow being efficiently used to produce desired vegetation or crops?

Inefficient irrigation water use

Are current irrigation methods and crop selections maximizing water use efficiency?

AIR RESOURCE CONCERNS

Emissions of particulate matter (PM) and PM precursors

Maps of air quality levels, documentation of dust or smoke issues – farms, roads, mines, forest fires, etc.

ANIMAL RESOURCE CONCERNS

Terrestrial habitat for wildlife and invertebrates

Habitat maps, water, corridors, wildlife friendly fencing and water, population trends, etc.

Inadequate livestock water quantity, quality and distribution

Discuss the need for improved distribution, quantity and reliability of water for livestock in order to control distribution and timing of grazing.

ENERGY RESOURCE CONCERNS

Energy efficiency of equipment and facilities

Energy efficiency of field operations

Discuss ways to improve energy efficiency such as solar conversions, improved roads, more efficient machinery, etc.

ADDITIONAL RESOURCE CONCERNS

The outline presented in the previous slides contains only the most common resource concerns for Arizona. Any of the other concerns on the NRCS list can be included in this chapter if they are found to be important.

Also, the District may wish to include some concerns not on the NRCS list. For example, feral animals (burros, pigs, dogs, and cats), predators, law enforcement, illegal dumping and vandalism, legal or regulatory issues that hamper timely conservation projects, wilderness or other "protected" areas, etc.