



Navajo Nation Community Leaders Climate Change Adaptation Planning Workshop: Establishing Natural Resource Priorities

Summary Report

March 20-22, 2018

Northern Arizona University's Native American Cultural Center
Flagstaff, AZ

March 27-29, 2018

Nenahnezad Chapter House
Fruitland, NM

Workshop Organizing Partners:

Navajo Nation Department of Fish and Wildlife

Navajo Nation Department of Agriculture

Navajo Nation Department of Water Resources

Navajo Nation Department of Heritage and Historic Preservation

Summary Report Authors:

Gloria Tom, Navajo Nation Department of Fish and Wildlife

Carolynn Begay, Navajo Nation Department of Fish and Wildlife

Taylor Silva, Navajo Nation Department of Fish and Wildlife

John Begay, Navajo Nation Department of Fish and Wildlife



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Executive Summary

On March 20-22, 2018 and March 27-29, 2018, the Navajo Nation Department of Fish and Wildlife (NNDFW) hosted workshops for community leaders on the western and eastern halves of the Navajo Nation. There were 25 attendees invited to each three-day planning workshop to discuss and create a prioritized list of natural resource issues, as well as a plan for future climate change adaptation planning. These workshops consisted of collaborating with these community leaders by discussing climate change and its impacts to Navajo lands and identifying priority natural resource concerns. These concerns will form the basis of a climate change adaptation plan for the Navajo Nation.

The focus of these workshops involving grazing officials, land board members, and farm board members was to gain community-level insight on natural resource management and compare that to the perceptions of Navajo Nation natural resource professionals.

In January 2018 a workshop similar to these community workshops was held for the Navajo Nation Division of Natural Resources (NNDNR) and the results will be discussed later in this report. This report summary will be used to address future climate change adaptation throughout the Navajo Nation.

Goals and Objectives

The goals of these climate change workshops were:

- Brainstorm a list of natural resource issues
- Create a priority list of natural resource issues
- Create a plan for climate change adaptation planning process
 - Compile a list of actions, timeline and points of contacts
 - Create a plan for climate change adaptation planning process with data generated

The Planning Process

In addition to community leaders from Farm Board, Grazing Committee, and Land Board, individuals from several Navajo Nation natural resource departments participated by facilitating discussions, and to help engage, inform, and attend to their community concerns regarding natural resources.

Each workshop introduced climate change on the Navajo Nation by showing a video on climate change impacts. The short film was produced by USGS and is titled “A Record of Change: Science and Elder Observations on the Navajo Nation”. The video was followed by a slide show presentation from the Navajo Nation Department of Fish and Wildlife staff on, “What is Climate Change”. After these presentations the attendees were asked to provide feedback on various aspects of climate change on the Navajo Nation and the attendees were divided into groups for future breakout sessions. The breakout sessions consisted of:

Breakout Session 1: “How does Climate Change affect my community?”

Breakout Session 2: “What are the Natural Resource concerns?”

- Determine common areas of natural resource concerns
- Vote on the top natural resource issues

Breakout Session 3: Fish Bone Exercise

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- Create fish bone diagrams for top natural resource concerns (3-4 topics per group)

After the breakout sessions were completed NNDFW staff presented the climate change adaptation planning process that is used by Institute for Tribal Environmental Professionals (ITEP). The workshops concluded with an open discussion on management action strategies, including timelines and identifying responsible person(s).

Analyzing Priority Concerns

Our process used to engage participants to brainstorm on climate change consisted of creating small group discussions. By doing this we allowed the community leaders to have a voice in a more comfortable environment. As a result we received valuable input on their community's natural resource issues, concerns, and the external factors influencing those issues. For example, water windmills are not working due to lack of funds to maintain them.

Taking Action

Once the priority concerns were identified, participants discussed action strategies for addressing these natural resource concerns. For example, for more ample grazing areas it was determined Grazing Officers need maps of wildlife areas, carrying capacity information, land uses (home sites, farms), and water resources.

Introduction

As a result of the NNDNR Strategic Climate Adaptation meeting held in January 2018, a NNDNR Climate Change Team was created which included:

Name	Department	Title
Eddie Benally	Navajo Nation Department of Fish and Wildlife	Wildlife Conservation Officer
Chad Smith	Navajo Nation Department of Fish and Wildlife	Zoologist
Terilynn Yazzie	Navajo Nation Department of Fish and Wildlife	Fish Biologist
Carlee McClellan	Navajo Nation Department of Water Resources	Senior Hydrologist
Rowena Cheromiah	Navajo Nation Department of Minerals	Minerals Royalty Flash Audit Manager
Vangie Curley-Thomas	Navajo Nation Division of Natural Resources	Deputy Director
Melinda Arviso-Ciocco	Navajo Nation Heritage and Historic Preservation Department	Navajo Cultural Specialist
Roxie June	Navajo Nation Department of Agriculture	Principal Planner
Harriet Sandoval	Navajo Nation Heritage and Historic Preservation Department	Senior Archaeologist

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Charmaine Hosteen	Navajo Nation Department of Agriculture	Principal Extension Agent
Taylor Silva	Navajo Nation Department of Fish and Wildlife	Wildlife Technician
Carolynn Begay	Navajo Nation Department of Fish and Wildlife	Wildlife Technician
John Begay	Navajo Nation Department of Fish and Wildlife	Wildlife Technician
Gloria Tom	Navajo Nation Department of Fish and Wildlife	Director
Wilfred Big	Navajo Nation Department of Agriculture	Senior Extension Agent
Edison Emerson	Navajo Nation Department of Fish and Wildlife	Wildlife Technician
Vernonda Howard	Navajo Nation Department of Fish and Wildlife	Office Specialist
Aileen Hale-Chee	Navajo Nation Department of Fish and Wildlife	Administrative Service Officer
Leanna Begay	Institute for Tribal Environmental Professionals	Climate Change Program Coordinator
Bidtah Becker	Navajo Nation Division of Natural Resources	Executive Director
Kimberly Johnson	Navajo Nation Department of Agriculture	Office Specialist

The climate change team organized two workshops: one workshop for community elected leaders in the eastern half of the Navajo Nation and another workshop for community elected leaders in the western half of the Navajo Nation. The workshop locations were determined by available lodging areas, conference room availability, and traveling distance for attendees. These workshops were funded through the 2016 Bureau of Indian Affairs (BIA) Tribal Resiliency Grant for Tribal Adaptation and Capacity Building. Under this grant the NNDFW funded twenty-five participants to attend each workshop, including lodging, meals, and mileage from their worksite to the workshop location.

In late February NNDFW's Climate Change Program provided DNR's priority natural resource concerns at a reservation-wide Grazing, Land Board, and Farm Board meeting. After the presentation, multiple community leaders volunteered to participate in one of the workshops. NNDFW also coordinated with the Department of Agriculture who provided a recommended list of Grazing, Land Board and Farm Board members they believed should attend.



The first workshop took place March 20-22, 2018 for the Western half of the Navajo Nation at Northern Arizona University (NAU) - Native American Cultural Center in Flagstaff, Arizona. The second workshop took place March 27-29, 2018 for the Eastern half of the Navajo Nation at Nenahnezad Chapter House in Fruitland, NM. Forty Community Elected Officials attended a three day workshop where they provided their input based upon their knowledge of their communities' natural resources. A prioritized natural resource concern list was generated and action strategies with timelines and responsible person(s) were developed.

Climate Change Adaptation: Five-Step Planning and Implementation Process

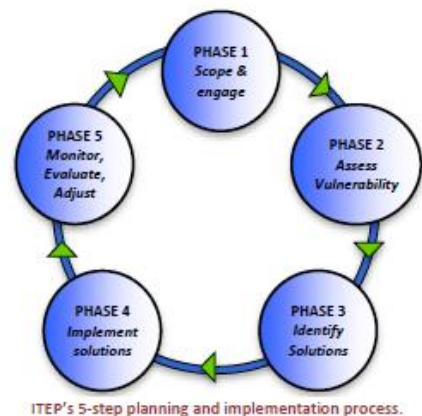
ITEP developed a five-step planning and implementation process to support tribal communities to take actions that will minimize their future impacts and reduce their vulnerabilities to climate change.

The Five Phases include:

- Phase 1 – Scope and Engage
- Phase 2 – Assess Vulnerability
- Phase 3 – Identify and Prioritize Solutions
- Phase 4 – Implement Solutions
- Phase 5 – Monitor, Evaluate and Adjust

Activities during the workshops were focused on gathering information to feed into Phases 1, 2, and 3 of the Climate Change Adaptation Planning Process. Below, we provide further detail about each of these phases and the knowledge shared by participating community elected leaders.

Figure 1 – Five steps to resilience diagram



Phase 1: Scope and Engage

Climate change has the potential to affect nearly every aspect of natural resource functioning and management. Yet, given limited time and resources, it is often necessary to initially focus on a few resources or areas.

This is not to say that other elements are not important; these elements could be considered in future planning and actions, but there is a need to start somewhere.

In Phase 1, the focus or scope of the plan is determined. The engagement process involves community members, natural resource managers, and leadership and this continues throughout the entire plan development. The following steps are suggested for the 'Scope and Engage' phase:

- Brainstorm what natural resource issues are important
- Prioritize and decide on topics to be the plan focus
- Gather initial climate change and impacts info
- Develop a value statement to guide the plan
- Establish a planning guide with goals and milestones
- Build support/form partnerships with communities
- Build support/form partnerships with leadership

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- Continue to foster communication and collaboration among departments

The Navajo community leaders completed the first and second bullet point steps during the workshops and used a USDA-Natural Resource Conservation Service (NRCS) planning process for natural resource identification and prioritization. This process is described in more detail below.¹

The attendees were separated into four groups and were asked to provide their opinions on several questions. Each group had a facilitator and a Navajo translator. By having a Navajo translator present it gave the attendees an opportunity to voice their opinion in their desired language.

Breakout Session 1: How does climate change affect my community?

After the community leaders watched a video on climate change impacts on the Navajo Nation and observations from various Navajo elders. The attendees also gained an understanding about climate

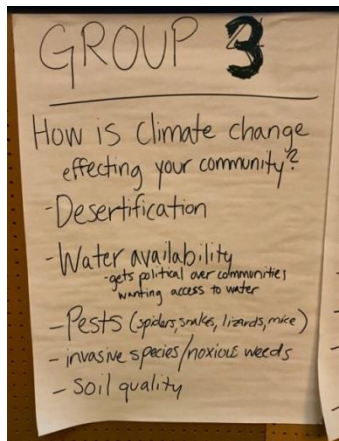


Figure 2 - Group concerns on climate change affecting communities

change impacts from NNDFW staff, and then the first inquiry session began. For the first breakout session, the attending community leaders were split into four groups and were asked to respond to the following question, “How does climate change affect my community?” The purpose of the question was to get the leaders thinking about how their communities were being impacted by climate change.

All attendees’ comments were listed on poster sheets and discussed. After the breakout session, all groups came back into the main room and displayed

their poster sheets, sharing the results of each discussion from the groups. By having each group present their

“Everyone has not just one horse but multiple horses because it is seen as being wealthier, even though they are skinny and not well kept”
–Navajo Community Leader

findings it allowed all attendees to have an open discussion on the issues that were brought up. It also allowed the individuals to see what other communities were facing when it came to climate change. Some of the common issues that were identified within the four groups are: water wells, water catchments, invasive species, drought, feral horses, sand dunes, water recharge, etc. (Refer to Appendix D1- D2). Attendees also talked about traditional practices diminishing. For example, modern day sheep herding involving the use of ATVs or vehicles, as opposed to walking or using horses. Issues of cultural barriers were also brought up due to most information being distributed in English rather than Navajo and how there is little to no youth interest in Navajo natural resources.

When giving a short presentation on climate change on the Navajo Nation there were many questions on why the information was not being told in the Navajo language and how staff should be interpreting the information to the community members who only understood Navajo. During this time many of the attendees stood up to say that they take on the responsibility in their own community to translate the information into Navajo so those who did not speak fluent Navajo did not feel opposed to presenting at their chapters. Many also requested for a copy of the presentation so they can study and present it to their communities in the Navajo language.

¹ Final Summary Report Navajo Nation Strategic Planning Workshop [PDF file], 4.

Breakout Session 2: What are your communities' natural resource management concerns?

The next breakout session focused on the groups identifying and prioritizing their communities' natural resources concerns. Many of the participants quickly identified NNDNR performance issues such as lack of enforcement, communication, and lack of collaboration between the chapter and NNDNR. The participants stated these concerns are a major problem due to interdepartmental conflicts and there is a lack of knowledge and familiarity on policies and regulations. After each group identified their priorities the results from each group was compares and those items that were similar were grouped together. A final natural resource management concerns list was developed the participants were asked to vote on their top priority(s). The results of the prioritization process are listed below in Table 1 (Flagstaff Workshop priority list) and Table 2 (Nenahnezad Workshop priority list).



Figure 3 - Community leaders are gathered around their priority list voting on their top concern

Table 1: Western Navajo Workshop Priority List

Priority	# of votes
1. Communication	16
2. Enforcement/ Compliance	14
3. Education/ Outreach	<u>14</u>
4. Water (management, security, conservation)	<u>12</u>
5. Feral horses	<u>10</u>
6. Grazing Management	<u>9</u>
7. Animal Control	<u>9</u>
8. Sustainability Resources (clean, alternative)	<u>8</u>
9. Soil Conservation	<u>5</u>
10. Land Use	<u>5</u>
11. Restoration/Rehabilitation	<u>4</u>
12. Pollution	<u>3</u>
13. Youth	<u>3</u>
14. Invasive Species	<u>2</u>
15. Record Keeping/ GPS data	<u>1</u>
16. Forest Management	<u>0</u>

Table 2: Eastern Navajo Workshop Priority List

Priority	# of vote
1. Enforcement	15
2. Feral Animals	13
3. Water	12
4. Grazing Managements	11
5. Air Quality	10
6. Funding	7
7. Education	6
8. Communication	6
9. Forestry	5
10. Illegal Dumping	4
11. Land Management	2
12. Pollution	2
13. Animal Control	2
14. Invasive Species	1
15. Youth	1
16. Erosion	0

Phase 2: Assess Vulnerability

Phase 2 is the heart of the Adaptation Plan. If you can understand why you are experiencing the impacts that you are, this will give you a lot of options for adapting. This phase focuses on assessing vulnerability to climate change impacts, or, in other words, asking what the Nation's strengths and weaknesses are for adapting to climate change. Vulnerability assessments provide information to identify adaptation options, set priorities, and identify knowledge gaps.

Vulnerability- Susceptibility to harm.

Vulnerability Assessment- Understand how climatic and non-climatic factors together will affect the Navajo Nation and its resources²

When we think about adapting to climate change, it is important to consider how both climatic and non-climatic factors interact together to create the impacts we are currently facing. The same impact could occur differently depending on the influence of non-climatic factors. For example, lack of enforcement (non-climatic factor) on illegal trash burning causing more greenhouse gases (climatic factor) to be released into the atmosphere. In result, there is no resolution due to lack of enforcement. This is one example of how climatic and non-climatic factors together will affect one of the Navajo Nations natural resources, which was discussed during both workshops.

Breakout Session 3: Cause and Effect using the Fishbone Diagram

In addition to the priority list created a cause and effect activity was used to analyze an issue. This is known as the fishbone diagram. The fishbone diagram identifies many possible causes for an effect or problem and adds structure during a brainstorming session. It immediately sorts ideas into useful categories. By using this method, the attendees were able to focus on three to four

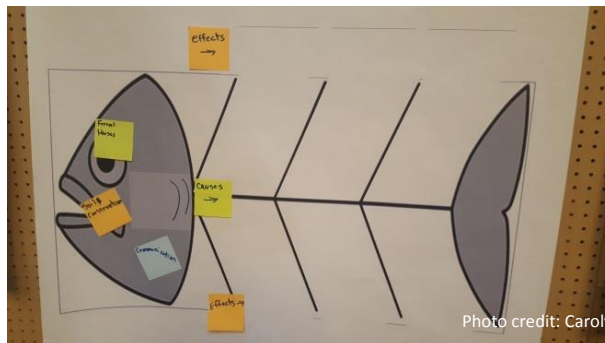


Figure 4 - Fishbone Diagram template.

concerns from the natural resource priority lists (communication, education & outreach, pollution, animal control, etc., refer to appendix E1-E2) to thoroughly analyze causes for each of these issues.

Figure 4 shows the template of a fishbone diagram. The head of the diagram represents the natural resource concern, or effect, while the body is branched into major categories that are the causes of the problem. Under each main category for the problem, the groups brainstormed all possible causes of the problem. Each group was asked "Why does this happen?" All ideas were captured.

² Ibid., 6.

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Each group created three to four fishbone diagrams and these are summarized in the tables below. All of the actual fishbone diagrams created during both workshops can be viewed in Appendix E-1 and Appendix E-2.

Below are the digitized fish diagrams that were combined from the Nenahnezad and Flagstaff workshop, compiled by the NNDFW's Climate Change Program.



Figure 5 - Group from Nenahnezad Workshop presenting their fish diagrams

Communication		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
Higher ups not listening to locals	- Working w/ each other to complete-agenda lack of attendance from committees.	(F)
	- Educating the community, whoever shows up	(F)
Certain individuals permitted to land, animals, etc.	- Lack of communication between generations-workload (Only certain people have permits and they are difficult to work with).	(F)
Locals prioritizing their concerns- taking what is learned to educate the communities	- Lack of communication between generations- workload	(F, N)
Lack of interdepartmental communication	- Inviting other communities to be aware of what is being done or proposed. Sharing the knowledge building a friendship- be open to people.	(F, N)
Departments not responding to community needs	- Six months to convene with departments on aligning management plans- keeping track of goals, officials want to be certified (trained)	(F, N)
Permittees	- Lack of participation	(N)
	- Printed materials	(N)
	- Need materials to make presentations	(N)

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	- Permittees/residents go around local officials	(N)
Window Rock	<ul style="list-style-type: none"> - Cross training - Need training for GPS - Unclear procedures for assessing damage and disturbance - Lack of communication between departments - Lack of decision making - No follow up on permission 	(N, F) (N) (N) (N, F) (N, F) (N, F)
Dept. of Agriculture	<ul style="list-style-type: none"> - Lack of consistency across agencies <ul style="list-style-type: none"> • Uniformity - No access to computers - Email access - Lack of equipment cameras (GPS) 	(N, F) (F) (N) (N) (N)
Outside influences	(Fishbone diagram blank)	
Customer Service	<ul style="list-style-type: none"> - People can't answer questions - People can't communicate their Dept. policies accordingly 	(N) (N)
ISRA	<ul style="list-style-type: none"> - Records out of date - Can't make simple correction 	(N) (N)

Enforcement (Compliance)		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
Lack of communication	<ul style="list-style-type: none"> - Permits/ peoples land causing disputes - Need help BIA, Rangers (work along with) <ul style="list-style-type: none"> • Improve collaboration with equipment - Get better compliance - Agriculture Department in need of an answering call center; don't answer or no call back. - Lack of customer service 	(F) (F, N) (N) (F, N) (F) (N)

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Lack of safety and increase of disputes with lack of Officers/Rangers	- Safety First	(F, N)
	- Have another officer or Sergeant of arms along with grazing officials when talking with permittees.	(F, N)
	- Enforcement to happen at a neutral and safe location	(F)
	- Land base	(N)
	- No authority for grazing officials	(N, F)
Conflict of interest	- Officers are covering locations where family and friends are located	(F, N)
	- Lack of prosecution	(F)
	- Officers and rangers should not cover home community	(F)
Weak court system/lack of feedback on citations	- Issued citations get lost and no enforcement	(F, N)
	- Need a Six-month time limit to enforce, response time lacking	(F,N)
	- Rangers don't give tally count	(F, N)
	- Lack of documentation from former predecessor	(N)
	- No support & funding	(N, F)
	- Need natural resource as a priority	(N, F)

Education (Outreach, Youth)		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
Lack of Communication	- No communication, no knowledge, and no education	(F, N)
	- Parents are "not being parents"	(F)
	- No understanding of cultural teachings and language	(F, N)
	- Make information understandable and easy for older generations	(F, N)
Generation Gap Older vs. Younger generation	- Creates communication problems	(F)
	- Younger generation do not learn the Navajo language	(F, N)
	- Will not teach each other	(F)
	- Youth are not being taught by parents	(F, N)
	- Confusion on role responsibilities	(F)

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Lack of classes/ Programs in Schools	<ul style="list-style-type: none"> - Schools do not teach agriculture - Schools do not teach farming - Schools do not teach Navajo Language - Media doesn't use Navajo language 	(F, N) (F) (F, N) (N)
Lack of Funding	<ul style="list-style-type: none"> - Lack of money to teach - Get experienced technical writers - Gender inequality 	(F) (F, N) (F)
Lack of outreach	<ul style="list-style-type: none"> - Officials not being able to attend chapter meetings to educate community members - Lack of understanding <ol style="list-style-type: none"> 1. Regulations 2. Responsibility * grazing 	(F, N) (N, F) (N) (N)
Policy	<ul style="list-style-type: none"> - Not enough meetings (Permittee) - Need workshops at local community level - Food policy processing center <ul style="list-style-type: none"> • Vegetation • Beef • Prairie dog 	(N) (N, F) (N) (N) (N) (N)
Management	<ul style="list-style-type: none"> - Crop rotation L/S - Herd health, vegetation data, carrying capacity, soil studies, management 	(N) (N, F)

Land Use (soil conservation, Land management)		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
Overgrazing	<ul style="list-style-type: none"> - Using local animals to re-fertilize land - Improper use of land, poor land management - Making own illegal RMUs but using it wrong ex: overgrazing - Feral Horses - Drought - Trespassing - Illegal fencing - Illegal home site lease 	(F) (F, N) (F) (N, F) (N, F) (N) (N) (N, F)

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Over Population	- Less land for vegetation, SWCD reintroduction w/ state	(F)
Crop Rotation	- Erosion	(F, N)
Improper Use of Land	- Change of livestock	(F)
Lack of Water	- Rebuild earth dams - No snow - Water Shed, not capturing water efficiently • No recharge	(F) (F, N) (N, F) (N,F)
Do it for me – managing our own permit	- No land management for all	(F)
Water rights	- Soil retention - Water management • No feed back • No communication	(F) (N, F) (N) (N)
Earthen dam limits	- Less H2O usage, wind breaks	(F, N)
Limiting Land use for people/ wildlife/ plants/ domestic animals	- Soil studies for local education	(F)
Policy/update	- RBDO needs to update their policies • Need to be streamline and simplified, it's too complex. Home site leases, some homes are running businesses for example tire shops - Too many tires & environment waste distributed from vehicle repair shops - BIA firmly took care of home site leases but Navajo Nation takes care of it, Navajo Nation only limits ½ mile for grazing but water holes are further. - BIA took laws into account due to trust responsibilities, Navajo Nation is doing a poor job w/land use - Conservation Plan	(F) (F) (F) (F) (F) (N, F)
Illegal dump sites x2 (Pollution)	- Trading post owners started dumping trash into washes, Navajo Nation Chapters Charge for trash disposal	(F)

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	<ul style="list-style-type: none"> • Should we get rid of fee? - Air quality - Vegetation - water - Health issue - Old sheep dipping 	<p>(F, N)</p> <p>(N)</p> <p>(N)</p> <p>(N, F)</p> <p>(N)</p> <p>(N)</p>
Erosion	<ul style="list-style-type: none"> - Too many roads - Illegal rodeo grounds - Unauthorized burial sites <ul style="list-style-type: none"> • Need designated cemeteries affecting grazing. - Over grazing - Canals <ul style="list-style-type: none"> • Deterioration - Farmland <ul style="list-style-type: none"> • Idling • Linked H2O • Probate • Burial - Monsoon and Flash flooding <ul style="list-style-type: none"> • Channels and arroyos - Increased runoff streams - Decline in beavers and wetlands in mountains - Beavers damaging drainage infrastructure 	<p>(F, N)</p> <p>(F)</p> <p>(F)</p> <p>(F)</p> <p>(F, N)</p> <p>(N)</p> <p>(N)</p> <p>(N, F)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p>
Funds and Fencing	<ul style="list-style-type: none"> - Illegal Fencing <ul style="list-style-type: none"> • Navajo Nation does not consider Grazing permittees when starting projects • When a chapter approves a project w/o informing grazing permittees then problems occur - Restoration <ul style="list-style-type: none"> • Mine reclamation • Re-habitation of projects -well ponds • Reseeding ROW - Home site leases need to be fenced - Home sites should be less and consider more NHA housing 	<p>(F, N)</p> <p>(F, N)</p> <p>(F)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N, F)</p> <p>(F)</p> <p>(F)</p>

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	<ul style="list-style-type: none"> - Home site leases prices are too high - Need more rain catchments - Open range – trespassing 	<p>(F)</p> <p>(F)</p> <p>(F)</p>
Gravel pits	<ul style="list-style-type: none"> - Need more gravel pits, need to work with permittees 	<p>(F)</p>
Farming	<ul style="list-style-type: none"> - Less growth of crops <ul style="list-style-type: none"> • Effects farmers' incomes • Farmers don't make profit • Farmers can't afford equipment 	<p>(N, F)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p>
Education	<ul style="list-style-type: none"> - Lack of education - Lack of monitoring 	<p>(N, F)</p> <p>(N, F)</p>
People	<ul style="list-style-type: none"> - Traditional / cultural knowledge forgotten - Pollute water- trash, oil spills get into water - Expensive to produce - Overpopulation - Use too much water - Livestock- over population and under weight - Fracking -uses too much ranch water, gets into water table - Educate people <ul style="list-style-type: none"> • Rotational grazing • Reduce 4s 	<p>(N, F)</p> <p>(N, F)</p> <p>(N)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N)</p> <p>(N)</p>
Lack of plant cover	<ul style="list-style-type: none"> - Wind erosion - Sand dunes - Pollinators - Hotter/ drier - Over-use - Lack of land management - Hot, less rain - Feral livestock - Change in plant communities - Evaporation 	<p>(N, F)</p> <p>(N, F)</p> <p>(N)</p> <p>(N)</p> <p>(N, F)</p> <p>(N)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N)</p> <p>(N)</p>
Ponds	<ul style="list-style-type: none"> - Increase bare ground - Become source of erosion 	<p>(N)</p> <p>(N)</p>

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Invasive species		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
May lose animals/plants	- No outside collaboration/ ideas to conserve & experiment	(N)
Distributors	<ul style="list-style-type: none"> - Wind - Unregulated hay <ul style="list-style-type: none"> • Distribution of non-native plants - Illegal planting of drugs - Off Reservation work- transferring of plants/pesticides - Invasive transfer of on boats <ul style="list-style-type: none"> • Need better regulations/checks of boats 	(N, F) (N, F) (N) (N) (N) (N) (N)
Noxious weeds	- Need noxious weed law	(N, F)
Education	<ul style="list-style-type: none"> - Public education and outreach <ul style="list-style-type: none"> • Encourage people to cut down - Council needs to be educated- need to pass to be able to lead <ul style="list-style-type: none"> • Qualifications • Noxious weed laws need to be passed 	(N, F) (N) (N, F) (N) (N, F)

Sustainability Resources (Clean, alternative)		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
Renewable energy Wind/solar	<ul style="list-style-type: none"> - Industrial scale <ul style="list-style-type: none"> • Revenue - Residential 	(F, N) (F) (F, N)
Energy efficient Natural gas	<ul style="list-style-type: none"> - Efficient stoves <ul style="list-style-type: none"> • Pellet stoves - Convert to Natural gas - Scattered <ul style="list-style-type: none"> • Expensive 	(F, N) (F) (F) (F) (F)
Navajo cultural identity	<ul style="list-style-type: none"> - Ke' - Sheep - Sustainability 	(F, N) (F, N) (F, N)

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Community Leaders

	- Cooperation	(F, N)
Housing / development	- Federal law	(F)
	- No time allotted for weekly preventive maintenance	(F)
	- Adobes	(F)
	• Straw	(F)
		(F)
Agriculture	- Cooperative management	(F, N)
	- Local markets	(F, N)
	• Navajo food policy	(F)
	- Marketing drought tolerant crops	(F, N)
	• Hopi corn	
	- Drip irrigation	(F)
	- Food security: USDA inspection	(F)
	• If animals don't pass then there is no market	(F)

Funding		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) workshop:
More interests / voters at the community level on natural resources and conservation	<ul style="list-style-type: none"> - Horse round-up - Hire more rangers - Long term planning budget - More windmills - Earthen beds - Grazing fee - Reseeding - Livestock panels - Public education and outreach - RMU's fencing materials - District boundaries 	All (N, F)
Political process is slow – lose funding – deadline too short when funds come available		
Need grant writers/ professionals to specialize in getting money		
Build trust (accountability) for funding for support of community		

Water (Management, Security, Conservation)		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) Workshop
Technology & Infrastructure	<ul style="list-style-type: none"> - Lack of equipment - Lack of engineers - Conflict of Interest - No process for requesting repairs. - More projects than Window Rock can handle. - Mismanagement of funds. - Non-functional windmills 	All (F, N)
Environment (Drought, Water table no recharging)	<ul style="list-style-type: none"> - Climate Change - Less snow - More evaporation - Vegetation changing - Expensive to produce - People stop farming - Wildlife/ horses coming into communities - Livestock not priority - Watershed management planning - Overuse - No rain - Lack of education - No runoff - Water codes need to be updated - Illegal hauling from windmills 	All (F, N)
Little Colorado River (LCR) Water Settlement	<ul style="list-style-type: none"> - Officials not advocating - Documentation of crop reports needed. - Not understanding settlement. - Need for watershed planning. 	All (F)

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Community Leaders

Economic Factors (Funding)	<ul style="list-style-type: none"> - Want access to USDA grants - Easier NRCS funding requirements - In need of drought agriculture infrastructure for insurance food. - Disorganized project planning - Advocacy lobbying - Alternative livestock sales on Navajo Nation. - Farming: less growth of crops, effects farmers income, farmers do not make profit) - Farmers cannot afford equipment 	All (N, F)
Livestock Overuse	<ul style="list-style-type: none"> - No market for horses - Lack of local markets - Invalid/ inactive permits (Lack of Control) - Feral horses' castration (identified as a solution) - Social status - Noncompliance - Overpopulation 	All (F, N)
Water Table Not Recharging	<ul style="list-style-type: none"> - Watershed management planning - Overuse - No rain - Lack of education - No runoff - Water code needs to be updated - Illegal hauling from windmills 	All (F, N)
People	<ul style="list-style-type: none"> - Traditional/ Culture knowledge forgotten - Polluted water from trash, oil spills get into water - Overpopulation (Higher expenditures for water) - Use too much water - Livestock are overpopulated and underweight - Fracking uses too much ranch water, gets into water table 	All (N, F)
Education	<ul style="list-style-type: none"> - Lack of education - Lack of monitoring 	All (N, F)

Navajo Nation Climate Change Workshop
Community Leaders

Water Rights	- No feedback and communication from NNDNR departments	(N, F)
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Pollution (Air Quality, Illegal Dumping)		
Cause	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) Workshop
Water	- Soil crust does not allow vegetation soil runoff in watersheds	All (N)
Abandoned Mines	- Lack of clean up funds - Uranium waste	All (N, F)
Regulations (lack of, no compliance)	- Documenting violations - Polluters not caught - No enforcement, no citations given out - Pollution - Rodent Infestation - Public Health - Oil dumping, changing oil on mountain - Breathing concerns from vehicle emissions - Black lung; human health concerns from mine blasting	All (N, F)
Infrastructure (lack of)	- Dumping sites is only open 8am-5pm (people are working) - High disposal fees - Animal carcass in need of dumping disposal site. - No recycling facilities	All (N, F)
People	- Irresponsible and lazy - Kinship - Bad parenting and lack of role models - Change people's outlooks - Burning fossil fuels, causes air pollution - Burning Styrofoam release gases into air causing temperature change - Burning plastic and trash, releases	All (N, F)

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	<p>gases into air causing temperature change</p> <ul style="list-style-type: none"> - Burning pressure treated wood causes cancer and other health concerns 	
Education	<ul style="list-style-type: none"> - No education on recycling (EPA and Climate Change Program) - Need public publications - Educate youth - Public education and outreach 	All (N, F)

Feral Animals, Feral Horses, and Animal Control		
Cause:	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) Workshop
Feral horses (family lack of horse interest)	<ul style="list-style-type: none"> - Just let them go - Lose interest - No patience - People who pass on - Too many studs- increase in horse population - Lack of teaching, emotional, physical growth, horses being less used → vehicle use increases 	<p>(N, F)</p> <p>(N, F)</p> <p>(N)</p> <p>(N)</p> <p>(N, F)</p> <p>(F, N)</p>
Feral dogs/ wild dogs	<ul style="list-style-type: none"> - Coyotes mix-not afraid of humans - Kills sheep, livestock, cows, colts, and children - Vicious dogs - Become public nuisance - No owners 	<p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(F)</p> <p>(F)</p>
Feral cats	<ul style="list-style-type: none"> - killing birds 	(F)
People are irresponsible (no brands, lack of care, roadkill)	<ul style="list-style-type: none"> - Cultural ways lost- not utilizing all parts from animals - No responsibility when an animal gets injured - Lack of fencing, open range - Parents do not teach kids to support animals - Kids convince parents to buy animals that look cute - Not cleaning after animals which leads to disease and sickness 	<p>(N, F)</p> <p>(N, F)</p> <p>(F, N)</p> <p>(F, N)</p> <p>(F)</p> <p>(F)</p>

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Round up	<ul style="list-style-type: none"> - Feral donkeys - Feral cattle - Transport & abandon horses from outside N.N - Give \$ incentives for people to catch their horses → N.N give people \$ to turnover horses - BLM program adoption program costly & too much work= horses released - Using contractors informing them of landscape-effective rounds ups 	<p>(N)</p> <p>(N), (F)</p> <p>(N)</p> <p>(N, F)</p> <p>(N)</p> <p>(F)</p>
Public Education (herd health, funding by tribe, adding incentives, outside influences)	<ul style="list-style-type: none"> - Enforcement - Right of ways → jurisdiction priorities - Castration training for officials (certification) - Having a “free” castration- incentives (co-sponsoring w/ animal control or other outreach/programs - Management incentives - Horse meat market- free range meat - Confusion on agency responsibilities/ roles 	<p>(N, F)</p> <p>(N)</p> <p>(F)</p> <p>(F, N)</p> <p>(F)</p> <p>(F, N)</p> <p>(F, N)</p>
Feral animals	<ul style="list-style-type: none"> - Shoot them - Spay/neuter - Enforcement-pinned or chained up - NHA- involvement - Dead animals, diseases, flies (insects carry bacteria) - Animal dumping - Rabies, ticks, chiggers 	<p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p> <p>(N, F)</p>
Lack of enforcement	<ul style="list-style-type: none"> - Transport of dead animals - Dog sweep - Lack of staff - No fencing 	<p>(N)</p> <p>(N)</p> <p>(N, F)</p> <p>(F)</p>
No laws & regulations for llamas	<ul style="list-style-type: none"> - Officials categorize llamas as sheep - Llamas always referred to as “other species” 	<p>(F)</p> <p>(F)</p>
Over population (carrying capacity reach)	<ul style="list-style-type: none"> - Not enough land to hold livestock population - Owners not being responsible - No control over feral horses (cannot capture them) 	<p>(F, N)</p> <p>(F, N)</p> <p>(F)</p>
Border Towns	<ul style="list-style-type: none"> - Blame Navajo Nation on feral animals - People haul animals onto the reservation 	<p>(F)</p> <p>(F)</p>

Navajo Nation Climate Change Workshop
Community Leaders

Lack of veterinarians and vet clinics	<ul style="list-style-type: none"> - No funding - Lack of staff 	(F, N) (F, N)
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Grazing Management		
Cause:	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) Workshop
Grazing permits	<ul style="list-style-type: none"> - Using dead peoples permits - Fees - Incomplete tally counts - Over permit - Missing area numbers - Disputes - Non-use → cancellation - Probate - Politics - Outdated permits 	(N) (N) (N, F) (N, F) (N) (N, F) (N) (N) (N, F) (N, F)
Conservation plans (lack of resources)	<ul style="list-style-type: none"> - No defined template - Lack of data - Hard to do - Updated every 10 years - Expenses- help writing (grant writers) - Over lapping customary use - Will plan out all that needs to happen - Educate through the conservation plan - No replanting of trees that are being cut for fire wood (program for replanting, help air and land) 	(N) (N, F) (N) (N) (N, F) (N) (N) (F) (F, N)
Livestock control	<ul style="list-style-type: none"> - Fencing - Feral livestock trespassing - Amend grazing regulations (too much power in over permittee) - No breed (who is responsible) - Cattle guard 	(N) (N, F) (N, F) (N, F) (N)
Water security	<ul style="list-style-type: none"> - Wind mills don't work - Competition - Conflict 	(N, F) (N, F) (N, F)
Public/ Education	<ul style="list-style-type: none"> - Permittees don't like to go to meetings - Try to make meetings more accessible 	(F, N) (F)

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	<ul style="list-style-type: none"> - More education on range and land rotational grazing needs to be implemented for grazing permits. - RMU's have no authority over leases that are not being used (need to manage & protect cultural areas, have maps to show people where they can graze) - No support for round ups, conflict was people didn't like that it was just put onto the chapters, president not supportive of horse hunt 	<p>(F, N)</p> <p>(F, N)</p> <p>(F, N)</p>
Funding	<ul style="list-style-type: none"> - Lack of funding - Without people attending meetings no fund for fencing, etc. - Funds to grazing for people who do castrations, not to chapters 	<p>(F, N)</p> <p>(F, N)</p> <p>(F)</p>
Miscommunication	<ul style="list-style-type: none"> - Office level re-writing books - Not passing it at council confusing Grazing Officials - Community is misinformed - Field level grazing officials not informed of office level projects 	<p>(F)</p> <p>(F, N)</p> <p>(F, N)</p> <p>(F)</p>
NPL is not a priority of our leaders	<ul style="list-style-type: none"> - Expedite re-issuance grazing permits - Involves compliance - No grazing permits but people not signing off, so people just move in 	<p>(F)</p> <p>(F)</p> <p>(F)</p>

Forestry Management		
Cause:	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) Workshop
Fire- wild or prescribed	<ul style="list-style-type: none"> - Reseeding 	(N, F)
Over grazing	<ul style="list-style-type: none"> - Livestock where they are not supposed to be 	(N, F)
No land improvement plans (Timber Harvest, preservation of cultural sites)	<ul style="list-style-type: none"> - Illegal harvesting of trees - No home sites - Hunting - Deforestation - Effects view, offering areas, ceremonies 	<p>(N, F)</p> <p>(N)</p> <p>(N)</p> <p>(N)</p> <p>(N, F)</p>

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Community Leaders

	- Increases erosion, vegetation loss, water loss, decrease in birds/ wildlife	(N)
Location of medicinal plants, traditional use areas	- Offering sites protected - In use sites being distributed	(N, F) (N)
Less deer (mountain animals)	- Animal population changes migration	(N, F)

Restoration & Rehabilitation		
Cause:	Why does this happen?	Comments from Nenahnezad (N) or Flagstaff (F) Workshop
Streams	- Invasive species - Pollution - Trash dumping	(N, F) (N, F) (N, F)
Rangeland (invasive species, overgrazing)	- Management (fencing) - Reseeding - Deferred grazing - Removal of feral/ trespassing livestock - Weeds - Increase in sand dunes - Increased erosion rates	(N, F) (N, F) (N) (N, F) (N, F) (F, N) (F)
Soil	- Abandoned mines - Erosion (windbreak)	(N, F) (N)
Wetlands (earthen dams)	- Illegal fencing - Trash dumping - Natural spring - Protection - Not being maintained	(N) (N, F) (N) (N) (N, F)
Construction rehabs	- Reseeding not happening	(N, F)
Education & Awareness	- Why are we doing this?	(N)
Illegal dumping	- Wood haulers chopping down multiple trees in any area - Creating new roads - Abandoned vehicles become attraction to pests	(F, N) (F, N) (F)
No offerings & ceremonies to bring back rain	- Fake medicine men - Becoming expensive to hire medicine men	(F) (F)

During discussions a few of the groups had a tendency to begin discussing adaptation strategies. Facilitators had to redirect the groups to continue discussing natural resource concerns. Yet the groups were actually creating solutions for some of their natural resource concerns, which is the next phase for accomplishing resiliency.

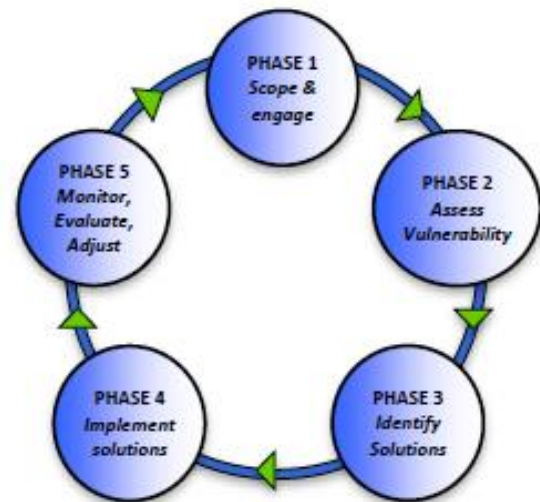
Phase 3: Identifying Solutions

After the fishbone session, the community leaders were introduced to a climate change adaptation planning strategy used by the ITEP Climate Change Program.

ITEP developed a five-step planning and implementation process to support tribal communities to take actions that will minimize their future impacts and reduce their vulnerabilities to climate change.

The five phases include:

- Phase 1 – scope and engage
- Phase 2 – assess vulnerability
- Phase 3 – identify and prioritize solutions
- Phase 4 – implement solutions
- Phase 5 – monitors, evaluate and adjust



ITEP's 5-step planning and implementation process.

The leaders were introduced to the five steps to resilience. It was explained that they had completed Step 1: Scope and Engage and Step 2: Assess Vulnerability within their group discussions. The groups had then lead into Step 3: Identifying Solutions. The purpose of this phase is to develop workable solutions to lower climate-related risks. Time was set aside to help the leaders determine actions that could reduce risks for people residing within the Navajo Nation. We pushed the community leaders to think bigger and more diverse for a better pool of suggestions, which could lead to identifying a forward-looking response that addresses the problem and offers additional co-benefits.

After all groups presented we moved on to the last open discussion where the attendees were asked “Who should get involved?”, such as local organizations, certain individuals within the Navajo Nation government, Division of Natural Resources, and Bureau of Indian Affairs. These contacts would help with the lack of information within the community and is a major key within the adaptation planning and implementation. The workshops action plans are shown below:

Flagstaff Action Plan

Who is involved:

- 5 Agency Councils
- Standing committee (RDC Committee)

Communication Action Plan

1. Two permittee meetings per month (1 at beginning of month, 1 at the end of the month)
2. NNDFW will create a Climate Change Workshop Report for Community Planning Meetings and Permittee Meetings.
3. NNDFW will provide report/presentation for farm board/ grazing officials by June 29, 2018.

Education & Outreach Plan

1. Continue outreach efforts for NNDFW Climate Change Team
2. Presentations at Permittee Meetings on community planning meet with assistance from Department of Agriculture and Fish & Wildlife (with planning, regular chapter meeting, district meeting)
3. Commit to communicating with community on concerns related to natural resources, climate change, and agriculture
4. Better management on scheduling meetings (district meetings, permittee, planning, regular chapter meetings)
5. Create resource report (monthly) - Elected Officials/ Department of Agriculture
6. At the completion of this report, NNDFW will coordinate with Department of Agriculture to develop a schedule to meet with Elected Officials.
 - Tie in with another meeting (ex. Agency meeting)

Gathering Resources Plan

??????

Nenahnezad Action Plan

Who is involved:

- District Grazing Committee
- Farm Boards
- Chapters
- NNDNR
- BIA
- NNDFW
- NNDNR Enforcement Programs

Communication Action Plan

1. Compile report on three workshops (Flagstaff workshop, Nenahnezad Workshop, NNDNR)
 - a. Report to attendees - NNDFW / Department of Agriculture
2. Develop a better coordinated effort with District Grazing Committee, Farm Board, Chapters, NNDNR (Flagstaff Workshop Communication Plan)

Education & Outreach Plan

1. Create an informational packet on Climate Change
 - a. For elected officials use for outreach

Gathering Resource Plan

- Maps/ Data
 - a) NNDFW: Wildlife areas (928 871 6450)
 - b) Grazing area maps
 - c) Data for DGC areas- carrying capacity
 - d) Forest area grazing
 - e) Land uses- home sites, farms
 - f) Water resources Carl McClellan
- } BIA

Climate Change Adaptation Plan

Phase 4: Implement solutions

As the group moves towards implementing solutions, it's important to make a cooperative stance with wide collaboration between the community and government level. It was mentioned by several of the community leaders that they were not supported through the Department of Agriculture or within the Chapters they serve. They discussed their need for support. For example, one of the community leaders expressed how they did not have access to a personal office at their chapter, the chapter equipment, training, and contacts. Community leaders also felt excluded from the planning meetings and not being accurately informed of said meeting outcomes. With this known, the importance of improved and better departmental companionship is well needed. The community leaders stressed there is a need for accountability within their chapters to make these changes such as management actions, strategies, and timelines.

A good example brought up was the lack of outreach and education across the Navajo Nation. The attending community leaders called upon the NNDFW's Climate Change Program to continue their education and outreach efforts across the Navajo Nation. The Climate Change Program Team was encouraged to reach out to the youth by visiting schools, classrooms, and students to promote climate change resiliency and provide education. Multiple requests were made for improving communication and outreach, and a final report outlining the overall outcome of the Climate Change Adaptation Workshops. The report will be used to share the knowledge the community leaders acquired as well as a platform to host their own workshops within their communities. This is but one example of how the community leaders have already implemented solutions for our Climate Change Adaptation Plan initiative.

During the workshops it was stated to DNR Executive Director, Bidtah Becker, by multiple community leaders that they admired the work which the Climate Change Program Team accomplished. The community leaders requested a permanent Climate Change Program within NNDNR. The NNDFW's Climate Change Program will continue its outreach efforts, visiting chapter houses, public events, and potentially schools across the Navajo Nation, to further promote education on climate change. Bidtah Becker concurred on the need for a permanent Climate Change Program and requested community leaders assistance in locating funding for the program.

Phase 5: Monitor, Evaluate and Adjust

Once the Climate Change Adaptation Plan is created it is considered a living document in which can be changed, revised and updated with data and scientific research. The level of priority given to each specified adaptation measure needs to take into account the immediacy of the threat, the resources available, the vulnerabilities of the location, and community expectations.

Some effects of climate change may present extreme risks that are unlikely to occur; other risks may not require attention until sometime in the future, even though they may already be affecting the Navajo Nation's operations.

Climate change threats addressed in a typical adaptation plan include emergencies (such as wildfires, more frequent storms, heatwaves and flooding) or longer term issues (such as rising average

temperatures, water availability). Adaptation is a repetitive process. Every measure will need to be monitored and reviewed as understanding of climate risks alters or as priorities change. For example, because of: new or improved climate data becoming available, changes to community demographics, changes in technology lowering implementation costs, and new regulatory or legislative obligations or requirements. If a change occurs then NNDNR may adjust and tailor the existing plan for a more effective adaptation plan.

The need for community involvement is also another factor that is essential and needs to be continued throughout the duration of decision making and Climate Change Adaptation Planning. For example the implementation of youth groups and conservation workers may be a great asset to get observations and information from the community on the ground. Input from employed natural resource professionals within NNDNR and community grazing officials, land board members, and farm board members have been collected. The goals of a climate change adaptation plan is to initiate a standard practice in all natural resource organizations on Navajo Nation, just as workplace health and safety practices have become integrated.

Presentations:

What is Climate Change?

On Day One of The Climate Change Adaptation Workshops a presentation overview of “What is Climate Change” was presented by the NNDFW’s Climate Change Program, Carolynn Begay, Taylor Silva and John Begay. The overview consisted of a short introduction on climate changes on the Navajo Nation. Attendees were then asked if they knew what climate change was but many did not understand. After they were asked if the attendee’s communities were affected they had more individuals raise their hands. From that point on they informed the community leaders about the causes of climate change, what it will be affecting and ending with adaptation strategies.

Climate Change Adaptation Planning Process

On Day Three of the Climate Change Adaptation Workshops a presentation of what the climate change adaptation planning process was presented by Leanna Begay of ITEP and John Begay of NNDFW. The presentation is used by ITEP’s Climate Change Program. The purpose of the presentation is to provide a step-by-step process on how to create a climate change adaptation plan. There are five steps followed in order to create the adaptation plan that are demonstrated in Figure 1, Page 6. The presentation provided a lot of resources to create a climate adaptation plan such as the adaptation planning tool kit on the ITEP website³. The presentation also gave some information on other tribes that have completed adaptation plans. The purpose of showing what other tribes have completed, is to get the Navajo Nation more aware of how smaller tribes have plans to mitigate and adapt to climate change. This will initiate the Navajo Nation to create a climate adaptation plan of our own.

³ For more information about the adaptation planning tool kit,
<http://www7.nau.edu/itep/main/tcc/Resources/adaptation>

Conclusions and Next Steps

On the final day of each workshop, attendees from the Flagstaff workshop stated they wanted permanent climate change staff to provide outreach and education on climate change, as well as, the adaptation plan for their communities. Attendees from the Nenahnezad workshop spoke about collaborating with the NNDFW's Climate Change Program, to give information about Climate Change translated into Navajo for their communities to fully understand. We also had several attendees bring up traditional knowledge and how we could incorporate past knowledge with modern adaptation strategies to conserve our natural resources.

"That is why we come to you the community leaders who are at the forefront of our natural resources."
-Gloria Tom

"Thank you Department of Fish and Wildlife for creating this workshop and asking for our opinions."
-Navajo Community Leader

During the closing remarks NNDNR Director, Bidtah Becker, exclaimed the importance of conservation for the Navajo Nation, to begin implementing climate change solutions, to protect the future generations of our people. The attending community leaders conveyed they wanted to pass on the information they gathered from the workshop to the community level.

Appendix

Appendix A-1: Flagstaff Workshop Planning Team

Gloria Tom	Navajo Nation Department of Fish and Wildlife
Carolynn Begay	Navajo Nation Department of Fish and Wildlife
Taylor Silva	Navajo Nation Department of Fish and Wildlife
John Begay	Navajo Nation Department of Fish and Wildlife
Eddie Benally	Navajo Nation Department of Fish and Wildlife
Chad Smith	Navajo Nation Department of Fish and Wildlife
Terilyn Yazzie	Navajo Nation Department of Fish and Wildlife
Carlee McClellan	Navajo Nation Department of Water Resource
Wilfred Big	Navajo Nation Department of Agriculture
Kimberly Johnson	Navajo Nation Department of Agriculture
Edison Emerson	Navajo Nation Department of Fish and Wildlife
Vangie Curley-Thomas	Navajo Nation Division of Natural Resources

Appendix A-2: Nenahnezad Workshop Planning Team

Gloria Tom	Navajo Nation Department of Fish and Wildlife
Carolynn Begay	Navajo Nation Department of Fish and Wildlife
Taylor Silva	Navajo Nation Department of Fish and Wildlife
John Begay	Navajo Nation Department of Fish and Wildlife
Eddie Benally	Navajo Nation Department of Fish and Wildlife
Chad Smith	Navajo Nation Department of Fish and Wildlife
Terilyn Yazzie	Navajo Nation Department of Fish and Wildlife
Carlee McClellan	Navajo Nation Department of Water Resource
Edison Emerson	Navajo Nation Department of Fish and Wildlife
Vangie Curley-Thomas	Navajo Nation Division of Natural Resources
Charmaine Hosteen	Navajo Nation Department of Agriculture
Melinda Ciocco	Navajo Nation Historic Heritage Program Department

Appendix B-1: Flagstaff Participant List

First Name	Last Name	Community	Title
Steven	Arizana	Tuba City	Grazing Committee
Calvin	Begay	Coppermine	Grazing Committee
Irene	Begay	Forest Lake	Grazing Committee
Juan	Begay Jr	Pinon	Grazing Committee
Allen	Jones	Leupp	Grazing Committee
Steven	Kee	Ganado	Farm Board
Vicki	Kee	Tonalea/Red Lake	Grazing Committee
Lucille	Krause	Cameron	Farm Board
Francis	Lester	White Cone	Grazing Committee
Priscilla	Mann	Kaibeto	Grazing Committee

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Jonathan	Manygoats	Dilcon	Grazing Committee
James	Parrish	Kayenta	Farm Board
Irvin	Shirley	Nazlini	Grazing Committee
Aaron	Simonson	Hard Rock	Grazing Committee
Russell	Smallcanyon	Navajo Mountain	Grazing Committee
Jack	Smith	Houck	Grazing Committee
Bill	Spencer	Greasewood Springs	Grazing Committee
Eugene	Tso	Chinle	Grazing Committee
Steven	Tsosie	Cottonwood/ Tselani	Grazing Committee
Happy	Begay	Inscription House	Grazing Committee
Lee	Yazzie	Bodaway/Gap	Farm Board
Marilynn	Yazzie	St. Michaels	Grazing Committee
Herbert	Zahne	Bodaway/ Gap	Farm Board

Appendix B-2: Nenahnezad Participant List

First Name	Last Name	Community	Title
Jonah	Barney	Mexican Springs	Grazing Committee
Leonard	Becenti	Naschitti	Grazing Committee
Dondi	Begaye	Red Lake	Farm Board
Henrico	Benally	Red Mesa	Grazing Committee
Harrison	Cly	San Juan	Farm Board
Reederson	Dee	Lukachukai	Grazing Committee
Douglas	Diswood	Gadiihi	Grazing Committee
Harold	Dodge	Nenahnezad	Grazing Committee
Lorena	Eldridge	Tsaile/Wheatfields	Farm Board
Lawrence	Gould	Newcomb	Grazing Committee
Paul	Houston	Jones	Dis. Land Board
		Ranch/Manuelito	
Kenneth	Johnson	Dennehotso	Grazing Committee
Derry	Lewis	Toadlena-Grey Hills	Grazing Committee
Rodger	Martinez	Ramah	Land Board
Kee Y.	Randall	Cove	Grazing Committee
David	Tsosie	Tolikan	Grazing Committee
Teri	Watchman	Rock Springs/Tsayatoh	Dis. Land Board

Appendix C-1: Flagstaff and Nenahnezad Agenda

Navajo Nation Communities Climate Change Planning Meeting:

Natural Resource Priorities for Climate Change Adaptation Planning

March 20 - 22, 2018
NAU's Native American Cultural Center (NACC)
Flagstaff, AZ

1. **Meeting Objectives:**

- a. Brainstorm a list of natural resource issues
- b. Create a priority list of natural resource issues
- c. Create a plan for climate change adaptation planning process:
 - Compile a list of actions, timeline and points of contacts
 - Create a plan for climate change adaptation planning process with data generated

Day 1	Agenda Item	Facilitator/Speaker
Tuesday		
12:00 pm	Arrive & Sign-In	<i>All</i>
1:00 pm	Invocation	<i>Wilfred Big, Department of Agriculture</i>
1:10 pm	Welcome	<i>Bidtah Becker, Executive Director, DNR</i>
1:20 pm	Workshop Overview	<i>Gloria Tom, Director, Fish and Wildlife</i>
1:30 pm	Introductions/Video/Icebreaker	<i>Gloria Tom, Director, Fish and Wildlife</i>
2:30 pm	Presentation: What is Climate Change	<i>Carolynn Begay/John Begay/Taylor Silva, Fish and Wildlife</i>
3:15 pm	Break	
3:30 pm	Breakout Session 1 (4 Groups): How Does Climate Change Affect My Community?	<i>All</i>
4:15 pm	Report Back on Breakout Session 1 (10 min/group)	<i>All</i>
5:00 pm	Adjourn	<i>All</i>

Day 2	Agenda Item	Facilitator/Speaker
Wednesday		
7:30 am	Arrive & Sign-In	<i>All</i>

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8:00 am	Recap	<i>Gloria Tom, Director, Fish and Wildlife</i>
8:30 am	Breakout Session 2: Natural Resource Management Concerns	<i>All</i>
10:00 am	Break	<i>All</i>
10:15 am	Determine Common Areas of Natural Resource Concerns	<i>All</i>
11:15 am	Vote on Top 10 Natural Resource Issues	<i>All</i>
12:00 pm	Lunch	<i>All</i>
1:30 pm	Unveil the “Top 10”	<i>All</i>
2:00 pm	Unveil DNR’s Natural Resource Management Concerns	<i>All</i>
2:30 pm	Merge Natural Resource Management Concerns/Discussion	
3:00 pm	Break	<i>All</i>
4:00 pm	Breakout Session 3: Fish Bone Exercise: Cause/Effect: Top 6 Merged NR Management Concerns	<i>All</i>
5:00 pm	Adjourn	<i>All</i>

Day 3	Agenda Item	Facilitator/Speaker
Thursday		
7:30 am	Arrive & Sign-In	<i>All</i>
8:00 am	Recap	<i>Gloria Tom, Director, Fish and Wildlife</i>
8:15 am	Report Back on Fish Bone Exercise (10 min/group)	<i>All</i>
9:00 am	Presentation: Climate Change Adaptation Planning Process	<i>ITEP (Invited)</i>
10:00 am	Break	<i>All</i>
10:15 am	Develop Management Actions/Strategies w/Timelines, Responsible Person(s)	<i>All</i>
11:30 am	Next Steps, Assignments Closing Remarks	<i>Gloria Tom, Director, Fish and Wildlife</i>
12:00 pm	Wrap Up & Adjourn	<i>All</i>

Flagstaff Facilitation Teams:

1. Kim Yazzie, NNDFW /Wilfred Big, NNDA

2. **Taylor Silva, NNDFW /Carlee McClellan, Water Resources**
3. **John Begay, NNDFW /Edison Emerson, NNDFW**
4. **Chad Smith, NNDFW /Eddie Benally, NNDFW**

Nenahnezad Facilitation Teams:

1. **Kim Yazzie, NNDFW /Charmaine Hosteen, NNDA**
2. **Taylor Silva, NNDFW /Carlee McClellan, Water Resources**
3. **John Begay, NNDFW /Edison Emerson, NNDFW**
4. **Chad Smith, NNDFW /Eddie Benally, NNDFW**

Appendix D-1: Flagstaff- How is Climate Change affecting my community?

Group 1

Whitecone:

- Increase of wind/vegetation breaks
- Artesian wells decrease

Ganado; erosions- no farming/ because weeds

Dilcon; lack of vegetation -> sedimentation- filling up water c

Catch water

Stronger small tornadoes- spring (warmer)

Increased water evaporation rates troughs

Warming of local geomorphology (rocks)

Invasive plants-salt cedar

Changing growing/plant season based on constellation movement

Native plants being cut down at younger stages

Acidic soil

Dune migration

Domestics movement over dunes

Well water- not sweet

Decrease snow

Modern convenience- easy, less walk

Vehicles more in communities

Blowing snow

Road development

Livestock feeding at different times due to wind/ heat/ cold

Mineral licks at springs

Drilling aquifers- deeper

Less H2O recharge

Cutting into ravines- erosion

Illness- Flu, colds, dry skin, kids & elderly affected by change

Pests/Insects increased by temperature

Economic changes due to animal feed & needing water.

Group #2	
-A lot of run off, no one addressing them	
- Earth dams- dry out	
-No water	<div> -Livestock die from lack of water & malnutrition -Horses die and Wildlife </div>
-Windmills- No water (water levels low)	
-Sand dunes – on roads	
-A lot of horses -eating up grasslands, chasing off livestock (cows) away from water.	
-Sand dunes covering up plants (grass)	
-Gardens-sand is loose	
- less snow on mountain	
-lack of moisture for our livestock – lead to malnutrition	
-Tuba city burning a lot of coal	
- Lack of EPA enforcement- Power plants, by pass filtrations at night.	
-Contamination of runoff, off mountains into water	
-More communication to communities- there is a disconnect from chapters to community needs	
- problems stay unresolved	
-Language boundaries- Navajo	
-Invasive species – Snake weed	
-No regulations on hay	
-taking up water from native plant species	
-Lack of infrastructure for farmers	
- Problems with jurisdiction of the land. Boundary war w/chapters	
-Majority of farmers on BIA land	
-Problem is they don't have farm board.	
-Land status	
-Communities themselves don't want to pay for water	
- Navajo Mountain has best water association	
-We need solar & windmills we don't have that anymore	
- No wind breaks	
-cut down too many trees, w/o re-planting	
-People cutting down trees by farms, thinking they are taking up water- but just causes more erosion	
- Tuba-health issue; flu increase	

Group 3 – Day 1

How is climate change affecting your community?

- Desertification
- Water availability (gets political over communities wanting access to water)
- Pests (spiders, snakes, lizards, mice, etc.)

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- Invasive species/ noxious weeds
- Soil quality
- Crops are not growing as well (corn, squash, melons, fruit trees)
- Feral horses
- Wildlife in developed areas (black bears, wild turkeys, raccoons, porcupines, mountain lions)
- Native wildlife disappearing
- Feral dogs
- Poaching of wildlife
- Health problems for humans and animals (flatworm, pinworm, fluke worm)
- Trash (illegal dumping)
- Mosquitoes
- Worms (flake worms)

Group 4

Chapters-
Greasewood
Coppermine
Nazlini
Pinon
Tuba City
Kayenta
Ganado
How Climate Change affects my community?
• Changing weather patterns
• Water holes drying out-> more trespass competition over water
• Erosion
○ Washes are deeper
• Cutting green trees
• Invasive species
○ Salt cedar using water
• Fire ants
• Seeing less wildlife
• More roads (ATVs)
• Decreased of livestock
• Utility rights of way
○ Not being reseeded
▪ Erosions
• Costing more money
○ Buying hay
○ Hauling water

- People bringing animals closer to communities
- Windmills not working
 - Lots of animals impacting a few places
- Wildlife moving into community areas
- Natural plant + insect cycles out of sync
- Ceremonies being lost, not practiced during the right season
- Haphazard home site development
 - Encroaching on grazing land
- Soil contaminants spreading in the dry wind and dust
- Not caring for livestock
- Need to take community planning more seriously
- Natural springs disappearing
- Not enough plants, replenish oxygen
- FERAL HORSES
- Need for livestock detriments/reductions
 - Resting land
- Maintaining fences to rest land
- Canceling unusual permits

Appendix D-2: Nenahnezad- How is Climate Change affecting my community?

Group 1

Chapters: Naschitti, Navajo, Sweet water, Little water/ Crownpoint, Ramah

- Ground H2O-wells deeper
- Elk populates Ramah-Deer moved
- Radon out effects= teaching
 - Vegetation- depletion/ over grazing
- Navajo- deeper artesian wells
 - Medicinal plants (awée tsaal)
- Horses/ over population
- Uranium effecting H2O source
- Walk/pumping out uranium/radon present
- Loss of language- Dine Bizaad (ranger generation)
 - Prayers
 - Oral history
 - Stories
 - Belief
 - Direct affects
- Talking w/ no action will not work
- Funding to communities/resource/tools
- Not doing traditional ceremonies
 - Offerings
 - Forgotten ourselves

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○ Forgot our way of life	
○ religion	
• Reconnection to mother nature	
○ Yellow corn pollen	Prayers
○ White corn pollen	
• No snow	
○ Black lake wash less water	
• Less H2O in local areas	
• Soil is being blown away	
○ Less vegetation	
• Localized snow/rainfall	
• Dams being filled in with dirt	
• H2O runs down the land fast	
○ Not held back	
○ Rain (moisture) less	
• Land is not being taken care of (horses)	
• Boundaries not respected by others	
○ Animals not eat (overgraze)	
• Motorized traffic cutting into land	
• Localized funding to help round up horses	
• Work with the grazing permittees for compliance/ livestock	
• Enforcement/ regulations	
• Need community collaborations with local and government	
• Ownership / responsibility / obligations	
○ Resources community	
• Emergency fund and H2O	
• Training (lack of) livestock, ownership, oriented training	
• Local stewardship	
• Working with water resources	
• Motivation to do better	
○ Improve surroundings	
• Sand dune/ sand	
• Less vegetation	
• Increased tumble weeds	
• Native vegetation	
• Erosion	
• Resources / who to call?	
• Animals lesser used	
• Water contamination at wells/ water sources/ water quality	
• Wells broken/ needs repairs	
• Water catchments= recharge water source	

Group 2

- Low water table
 - Wells are dry/ windmills
 - Too many livestock
 - Overgrazing
 - Too hot
 - Too much deer
 - Lukachukai
 - Sand dunes
 - Mexican Springs
 - Horse trail rides
 - Walking side by side
 - Erosion
 - Iyanbito
 - Making too many roads: wood cutters, to homes, forest roads
 - Low river flow
 - No snow
 - Non-permittee livestock owners
 - Higher population
 - More traffic on reservation and communities
 - ATVs
 - Losing our traditional ways of life
 - And who we are as holy people
 - Sheep herding w/ ATVs
 - Automobiles
 - Lack of education: Climate Change
 - Illegal burning
 - Trash
 - Dumping
 - Wind erosion
 - Fragmentation
 - Loss of Native plants/ food e.g.: onions, yucca, medicinal plants
 - Wildlife migration e.g.: roadrunners
 - Seasonal change
 - Temperature anomalies
 - Traditional astronomical changes
 - Air pollution
 - Lack of sustainability on the Navajo Nation
 - Noxious weeds
 - No regulation on hay on Navajo Nation
 - Invasive plant
-

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<ul style="list-style-type: none"> ○ Russian olive, Salt Cedar
<ul style="list-style-type: none"> • Illegal home sites- more erosions making new roads
<ul style="list-style-type: none"> • Lack of clean power <ul style="list-style-type: none"> ○ Solar, wind, tables
<ul style="list-style-type: none"> • Uranium mines <ul style="list-style-type: none"> ○ Abandoned
<ul style="list-style-type: none"> • Sweetwater <ul style="list-style-type: none"> ○ Water contaminated from uranium, oil, and arsenic, benzene
<ul style="list-style-type: none"> • Lack of recycle plants/ bins

Group 3

Chapters: Ganado, Nenahnezad, San Juan, Tsaile, Wheatfields, Hogback, Rock Springs, Tsayatoh, Tse Bonito

<ul style="list-style-type: none"> • Invasive species
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Livestock trespass
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Impacts farmlands
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Increases malnutrition for livestock
<ul style="list-style-type: none"> • Pests (ticks, mosquitoes, prairie dogs, flies)
<ul style="list-style-type: none"> • Water
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Earthen dams need clean-up
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Artesian wells reopen
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Windmills, wells, dams
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Community dispute over windmills/ access to water
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Effects economy
<ul style="list-style-type: none"> • Drought
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Families traveling far to haul water
<ul style="list-style-type: none"> • Predators (mountain lions, cougars)
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Attacking livestock
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Coming near homes
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Leaves carcasses
<ul style="list-style-type: none"> • Increase in sand dunes
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Land is moving away
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Destroys ecosystem
<ul style="list-style-type: none"> • Too many roads
<ul style="list-style-type: none"> • Loss in cultural sites
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Herbs
<ul style="list-style-type: none"> • Ancestral lands are in danger
<ul style="list-style-type: none"> • Regulations increase on permits land
<ul style="list-style-type: none"> • Overpopulation
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Deer population increase
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Elk population increase

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- Contamination
- Animal carcasses near wells
- Wildfires
- Education
 - People need to be educated on community concerns (natural resources climate change)
- Cultural barrier
 - Youth don't speak Navajo and understand
 - Can't communicate scientific information well to elders
 - Re-educate youth with teachings
 - Tree cutting- re-educate people to not cut green healthy trees

Group 4

Chapters: Newcomb, Red Mesa, Manuelito, Cove

Idle farmland- not enough water

- Captain tom reservoir empty

Cove- not enough snow pack

- Contaminated water

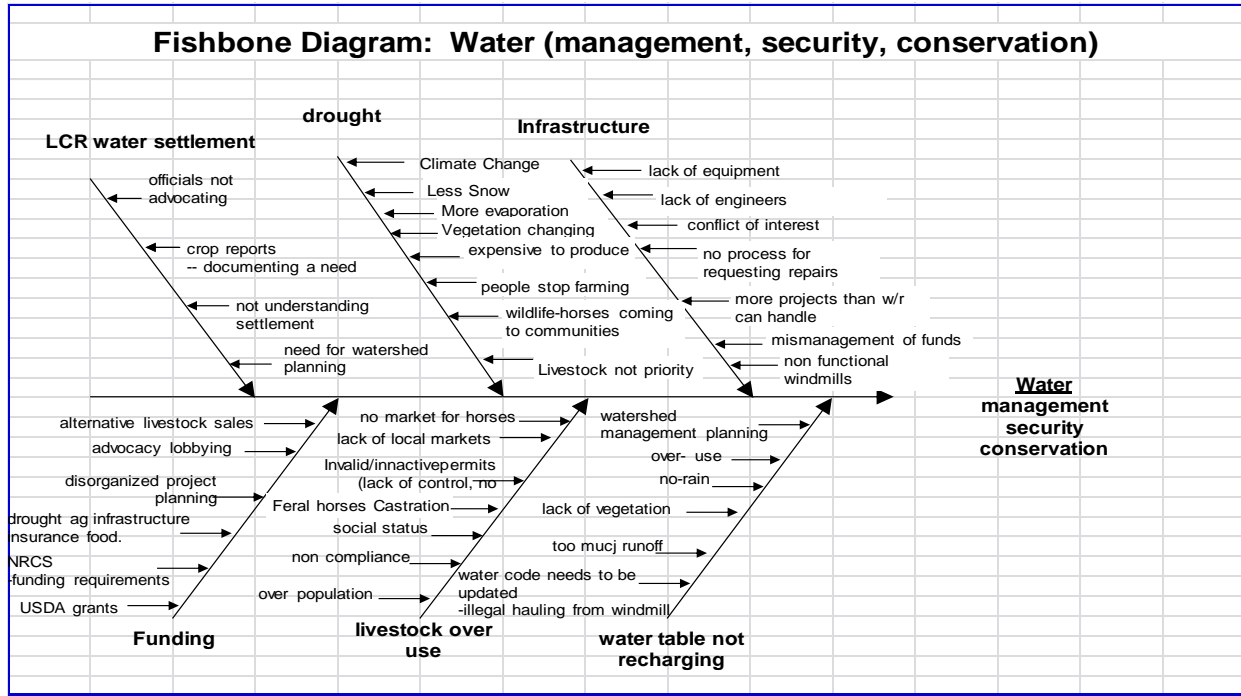
Ag → snow evaporates

- Noxious weeds → fewer edible plants
- HORSES
- Small oil spills, exposed pipelines, burning waste methane, smell
- Illegal dumping
- Wildlife in communities
- Younger kids not interested in farming or living off the land, (education)
- Declining condition of livestock
- Livestock moving more to find feed/water
 - Conflict
 - Competing with wildlife
- Conflict among permittees
- Sand, growing dunes
- Erosion, land doesn't hold water
- Cutting green trees
- People not connecting Navajo cultural traditions with environmental science
- Building too many roads (less plants more erosion)
- Burning trash
- Livestock overgrazing
 - Including feral horses
- Deep rooted shrubs dying off
 - Loss of water holding capacity
- Native plants replaced by woods

- Irrigation systems filling with sand
- Changing weather patterns
 - Wetter in the east, dryer here
- Hotter winters
- Higher populations

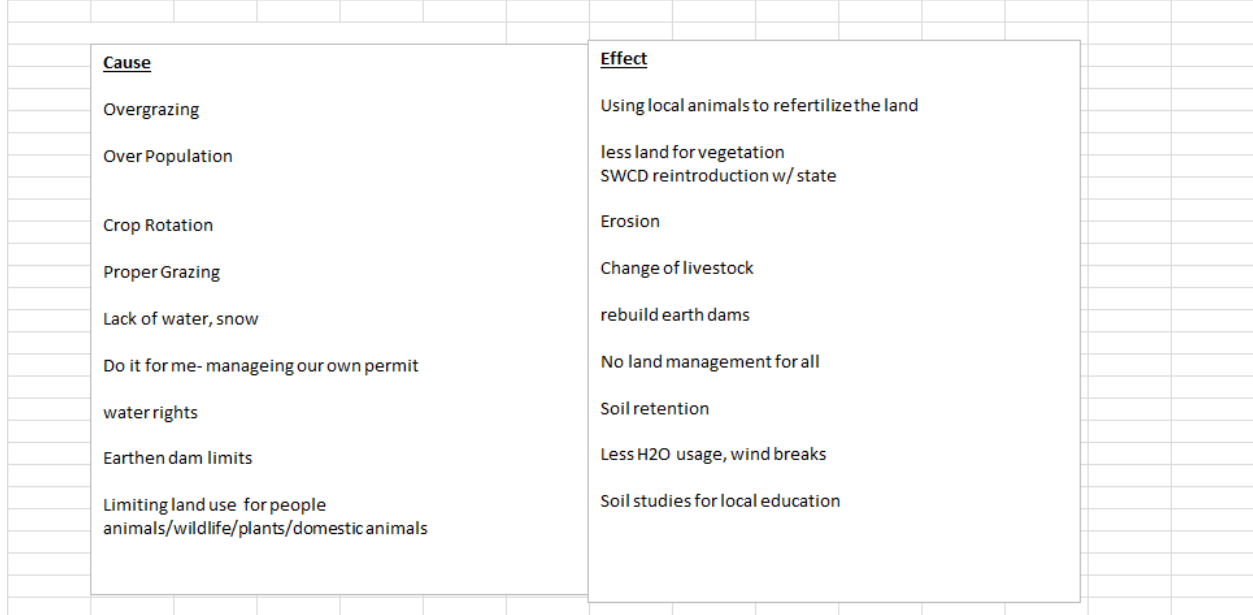
Drawn picture of the United States talking about "Balance"

Appendix E-1: Flagstaff Fishbone Diagrams

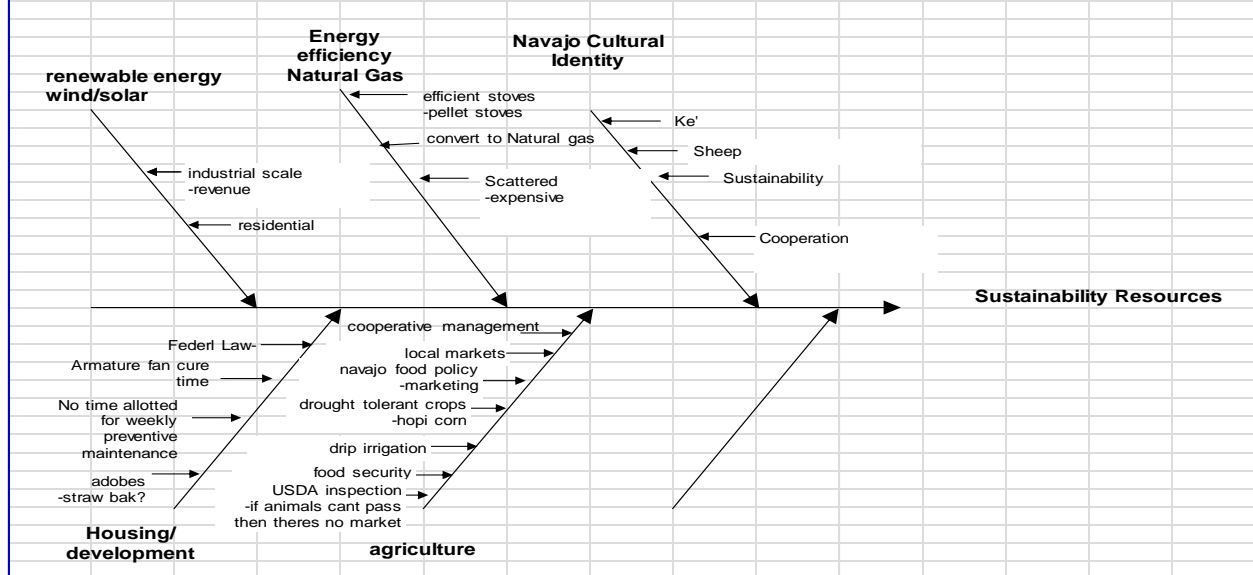


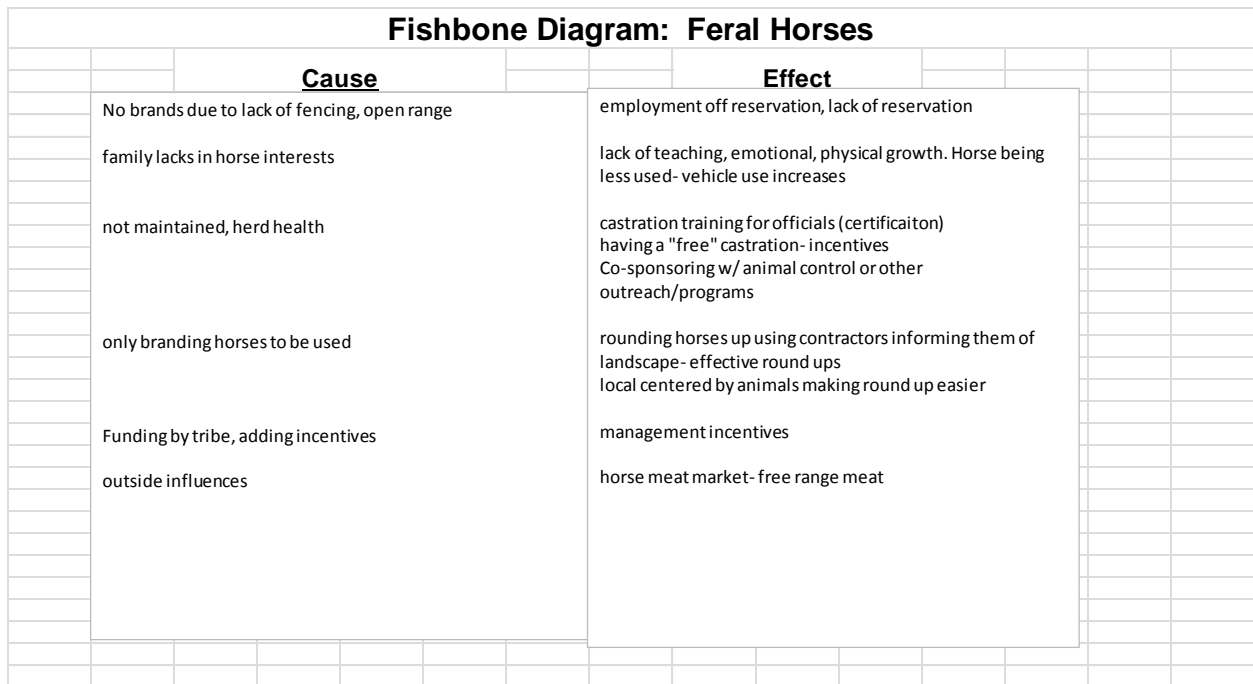
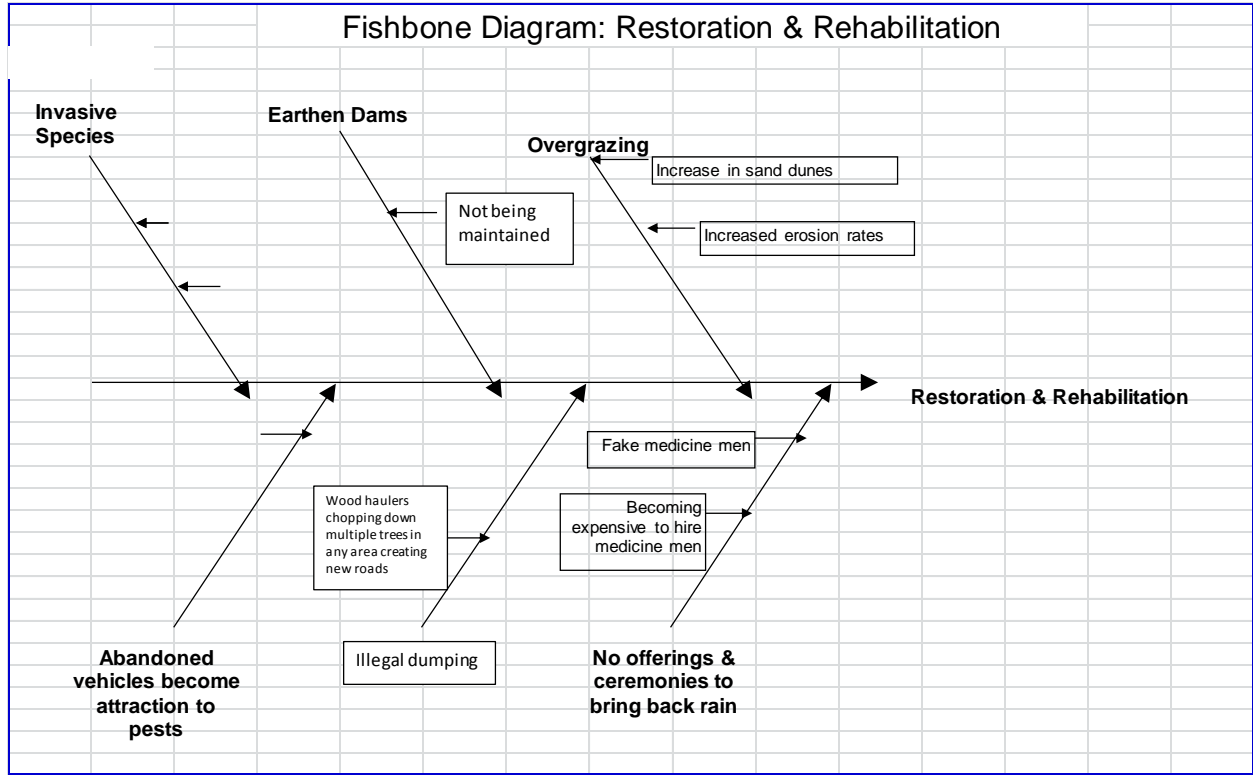
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Fishbone Diagram: Soil Conservation

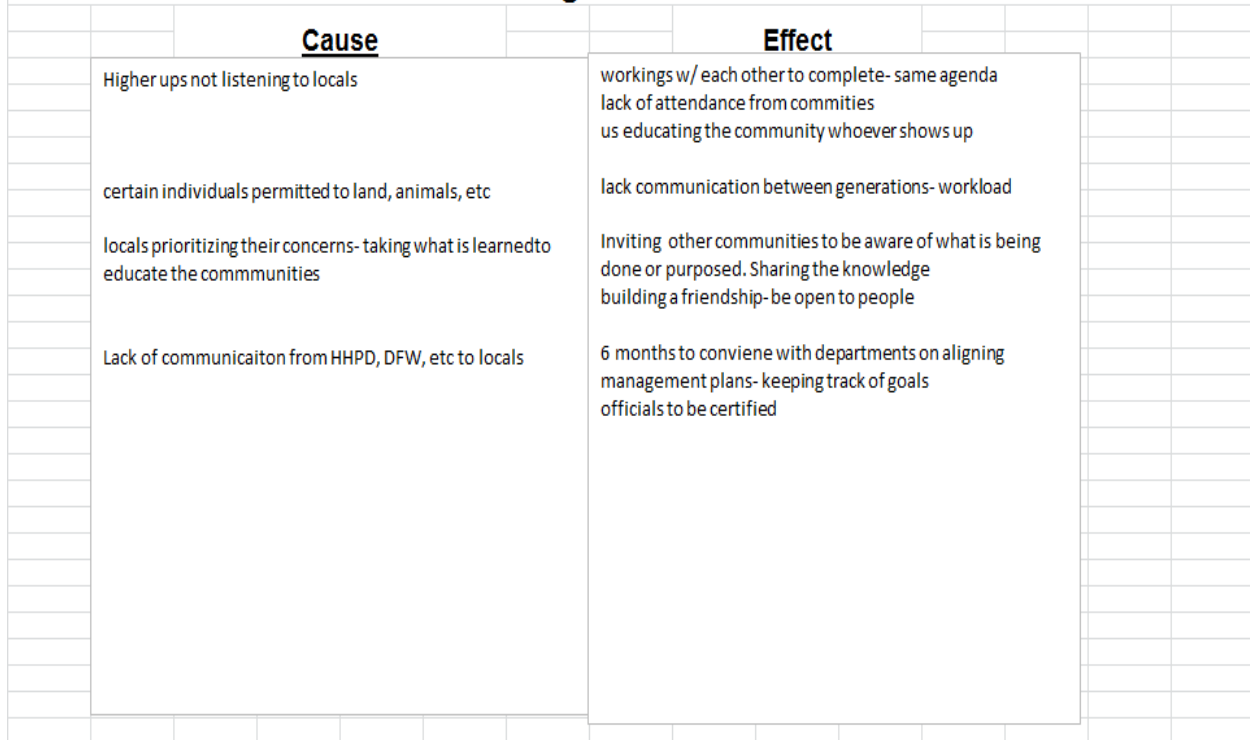


Fishbone Diagram: Sustainability Resources (clean, alternative)

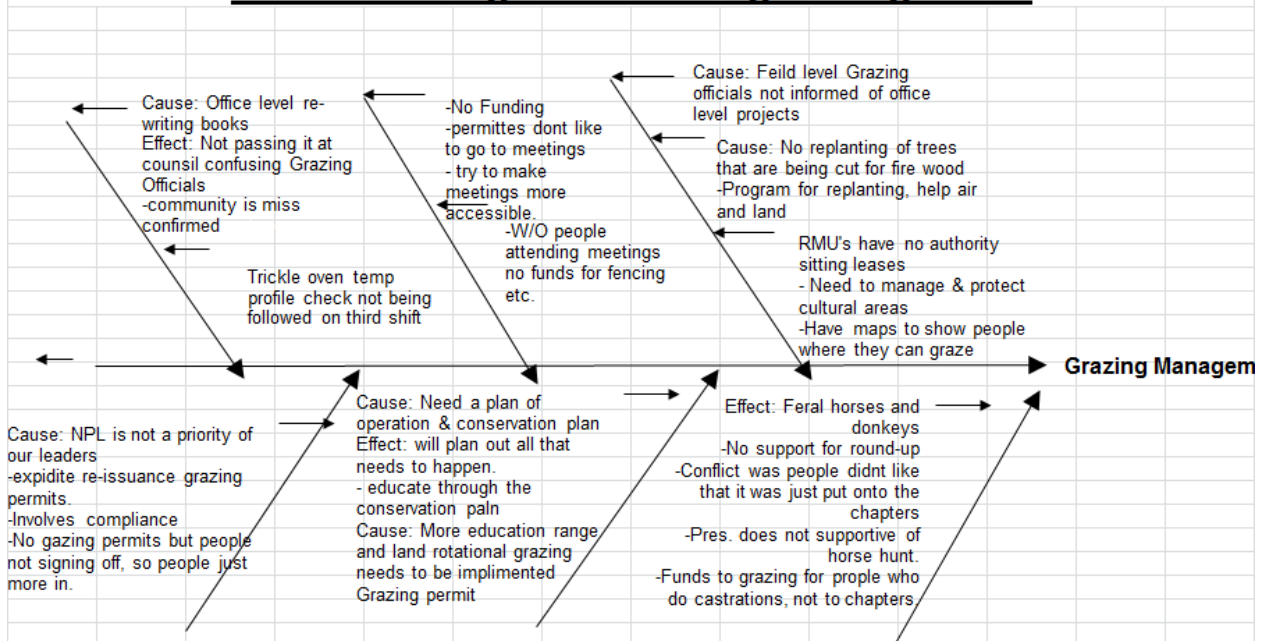




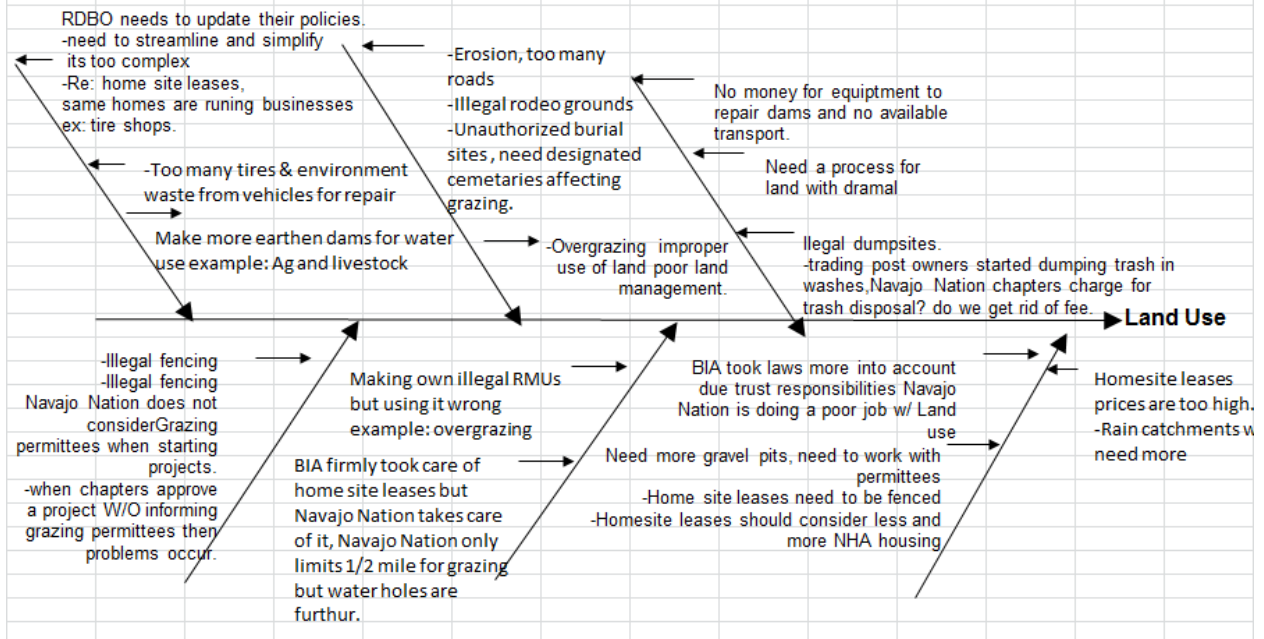
Fishbone Diagram: Communication



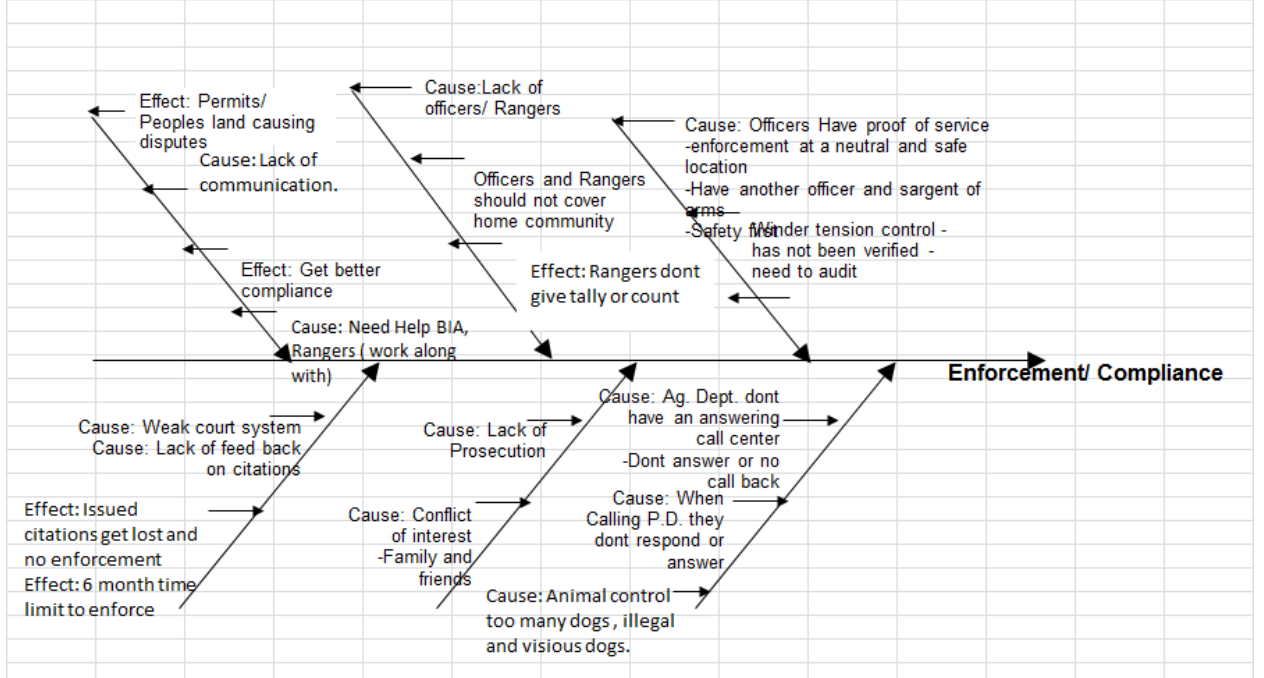
Fishbone Diagram: Grazing Management



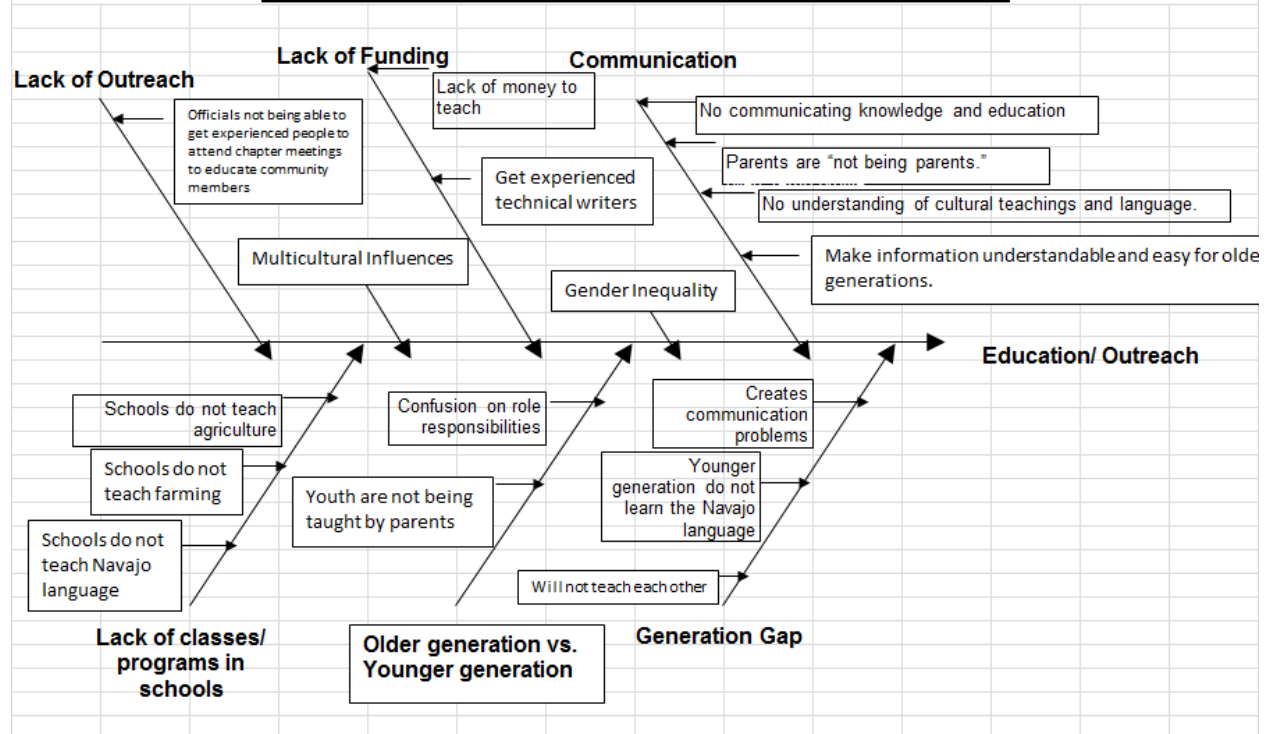
Fishbone Diagram: Land- Use



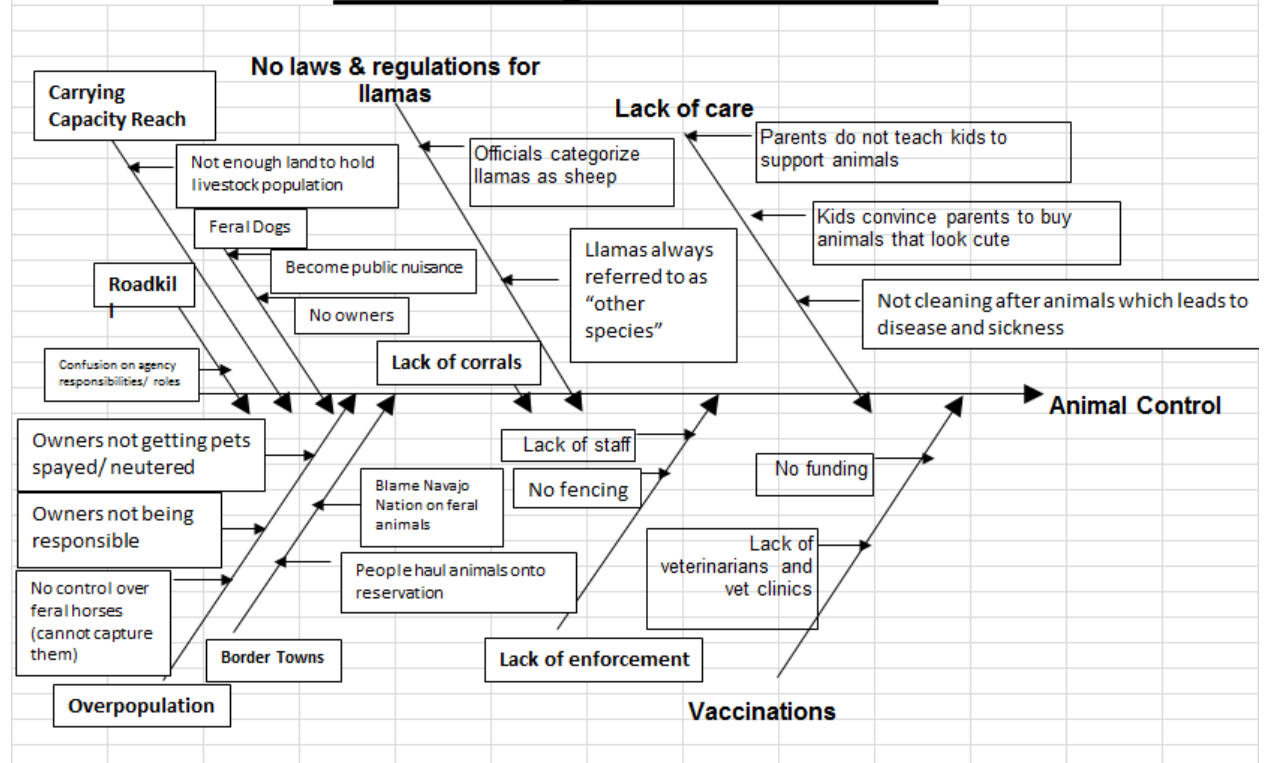
Fishbone Diagram: Enforcement/ Compliance



Fishbone Diagram: Education/ Outreach

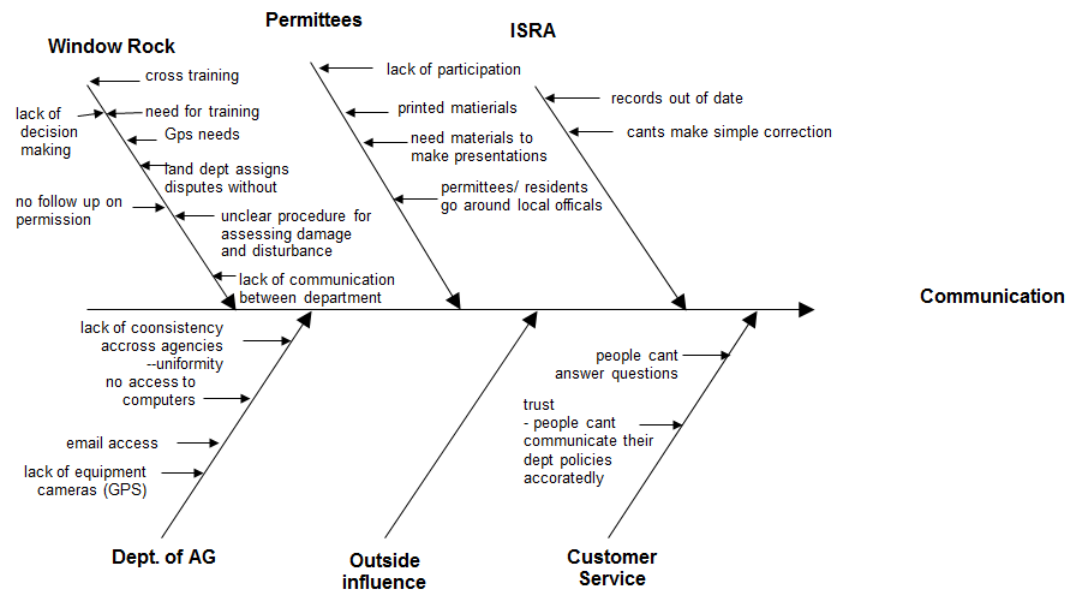


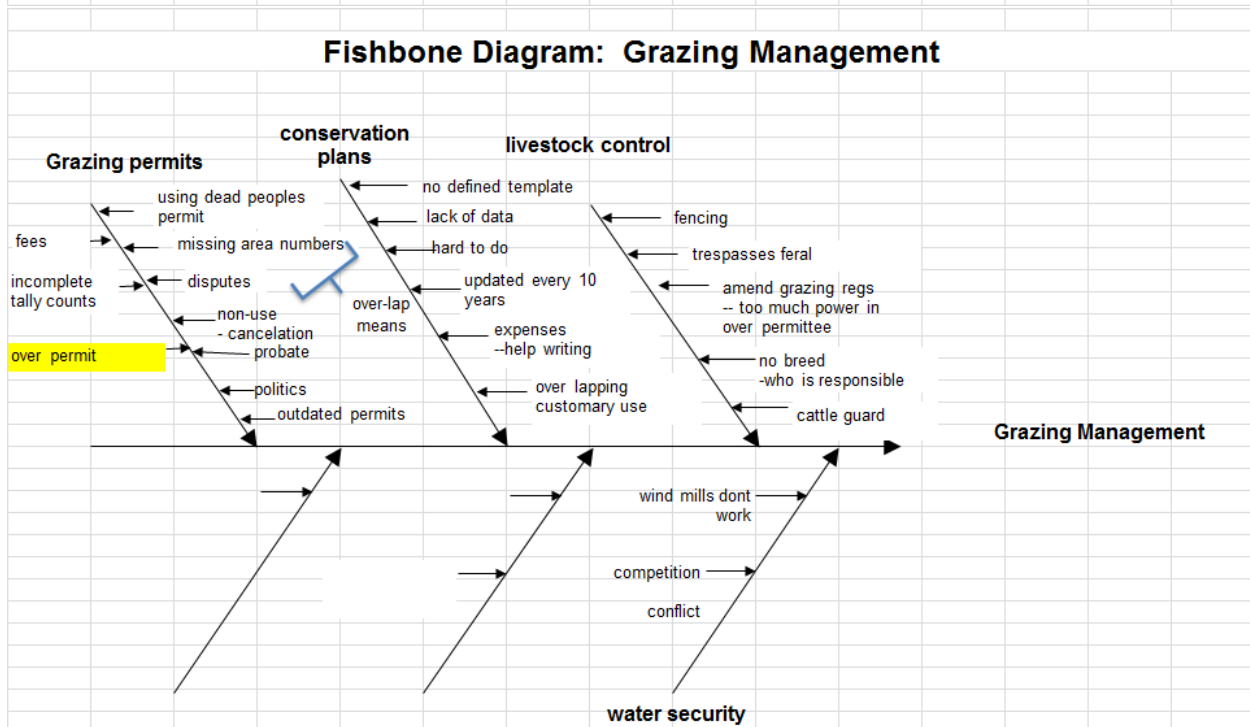
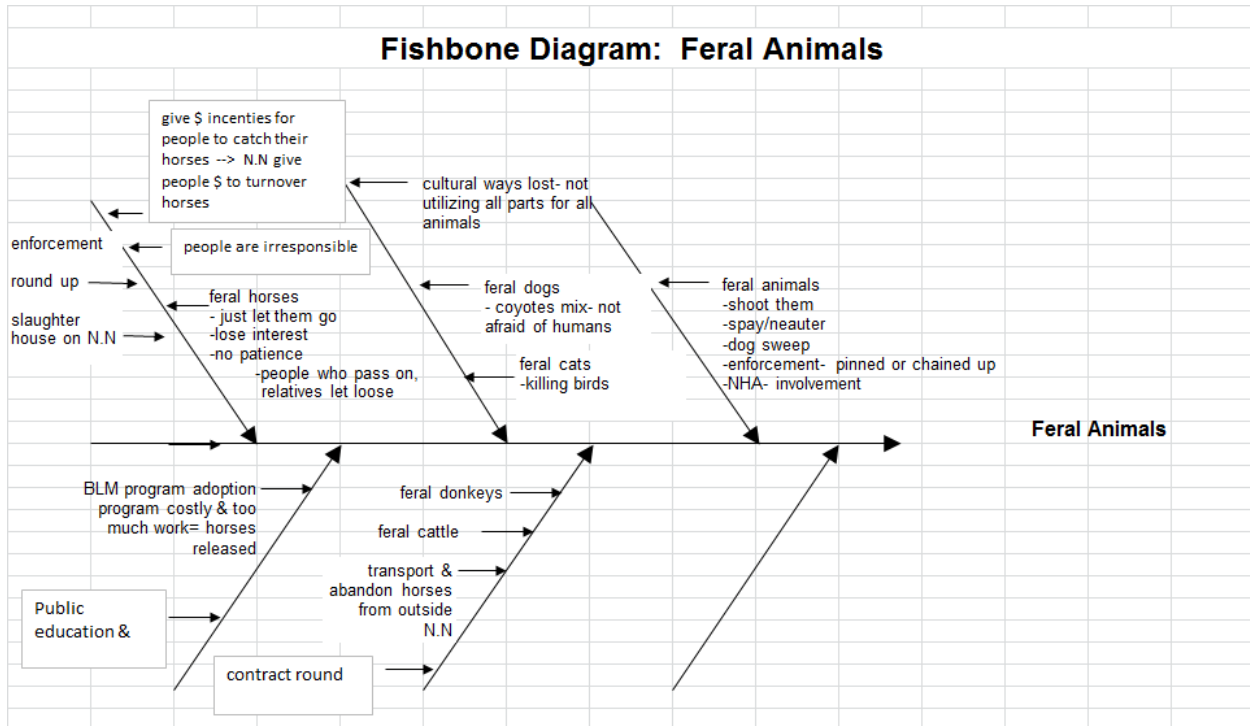
Fishbone Diagram: Animal Control

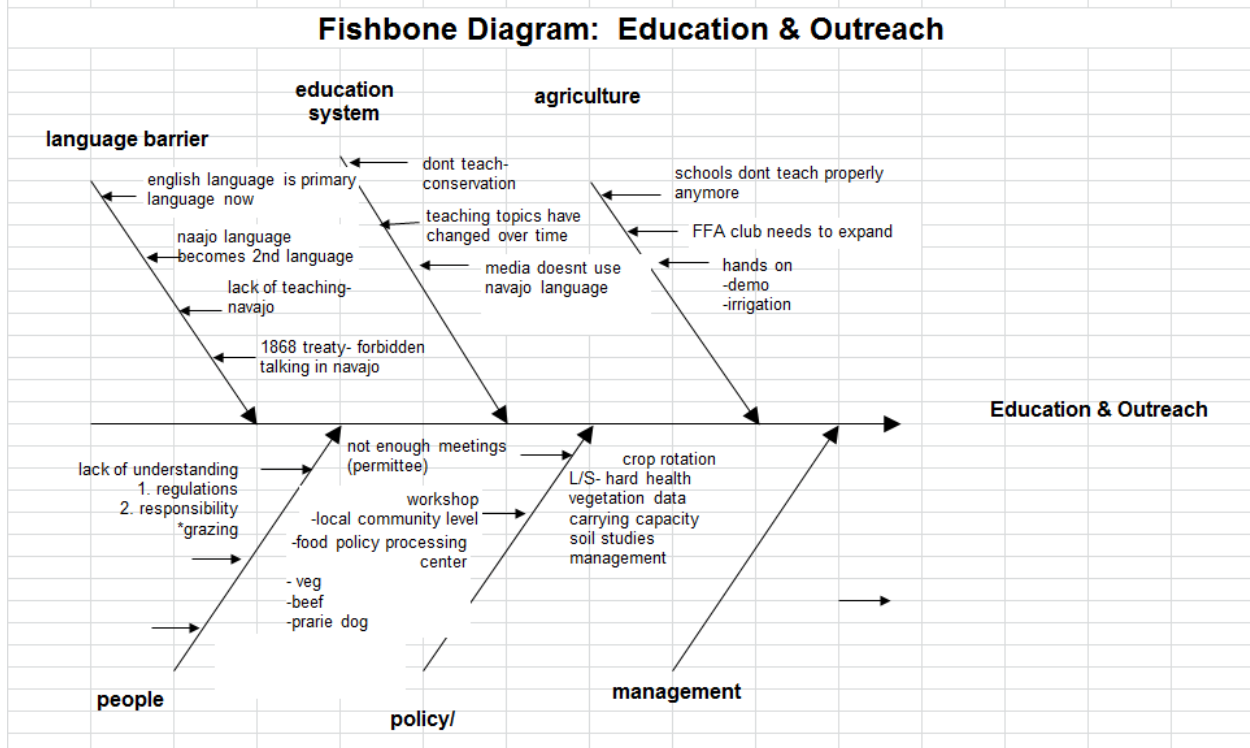
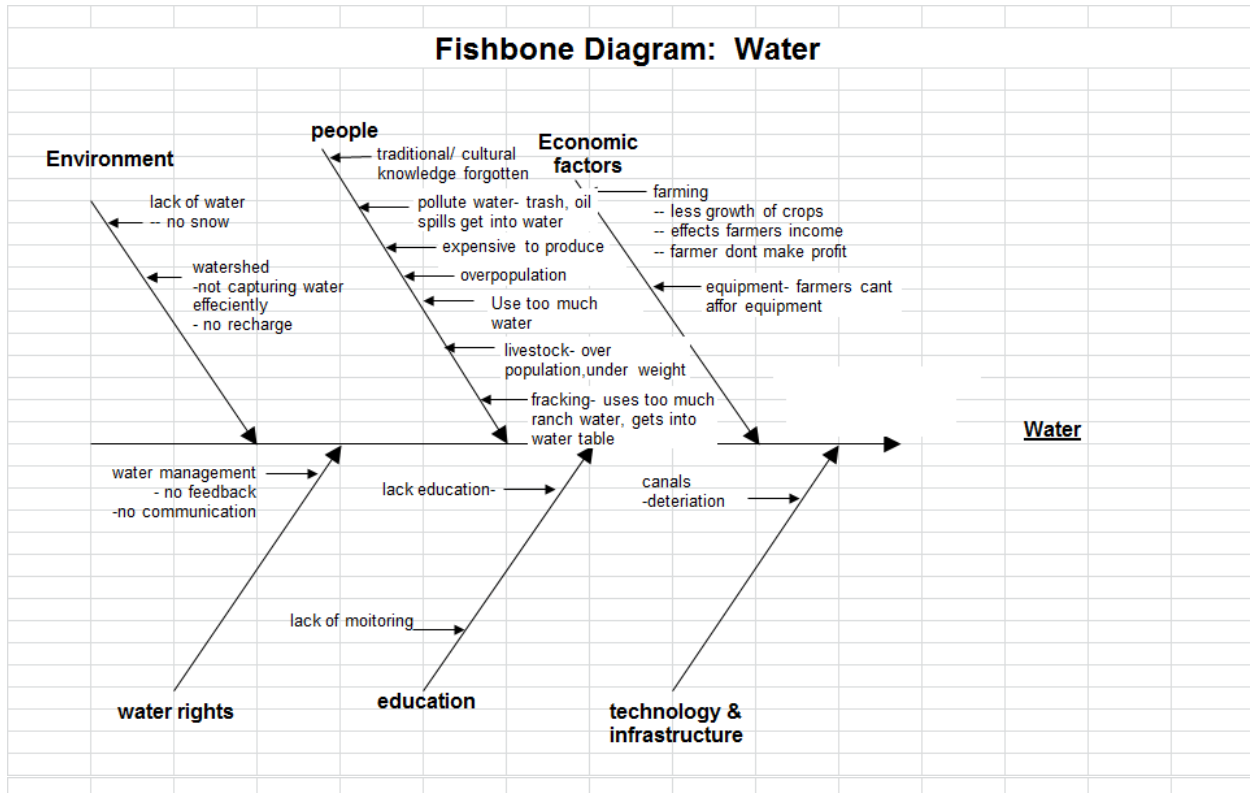


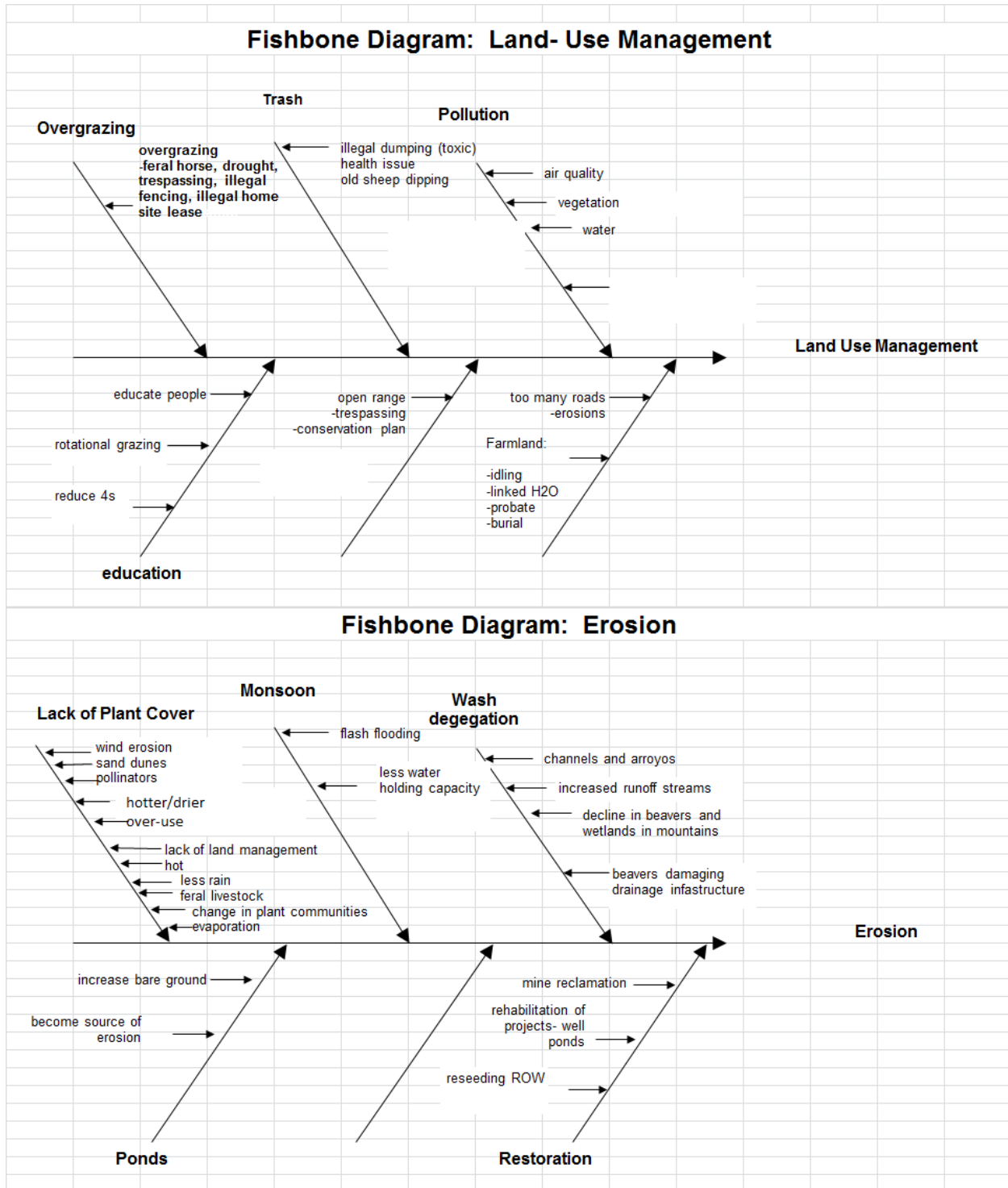
Appendix E-2: Nenahnezad Fishbone Diagram

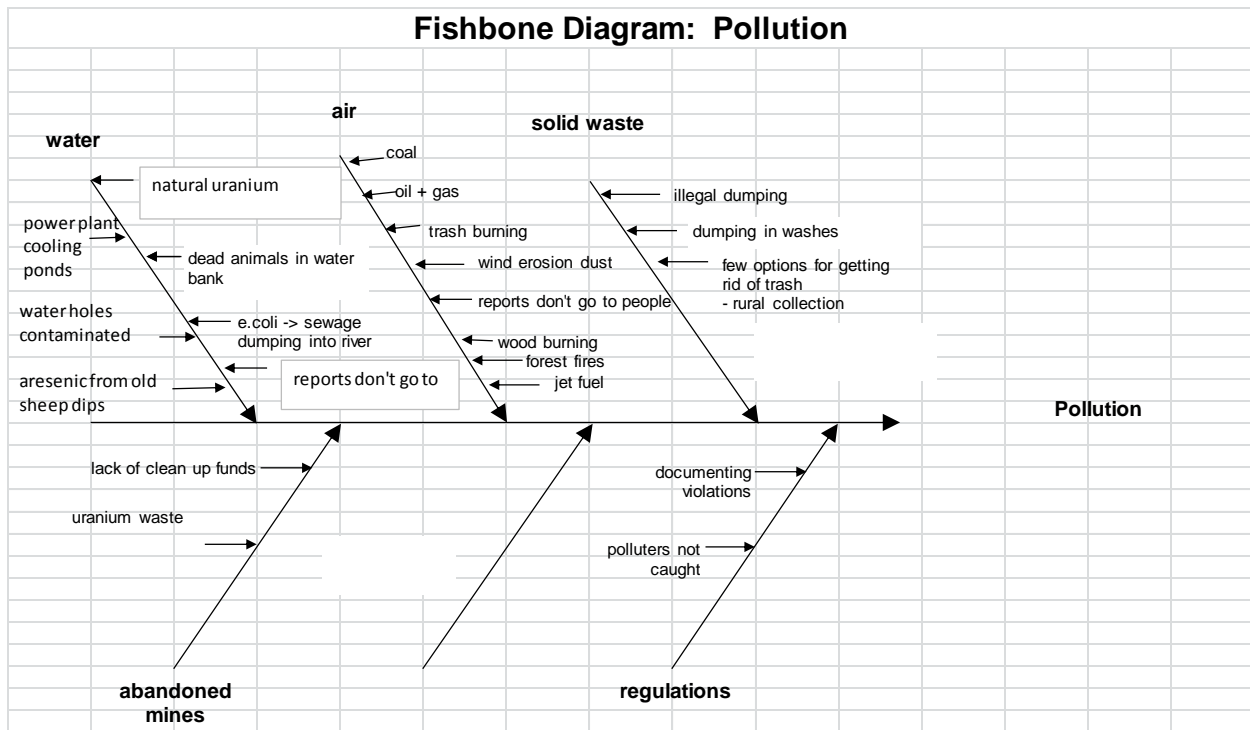
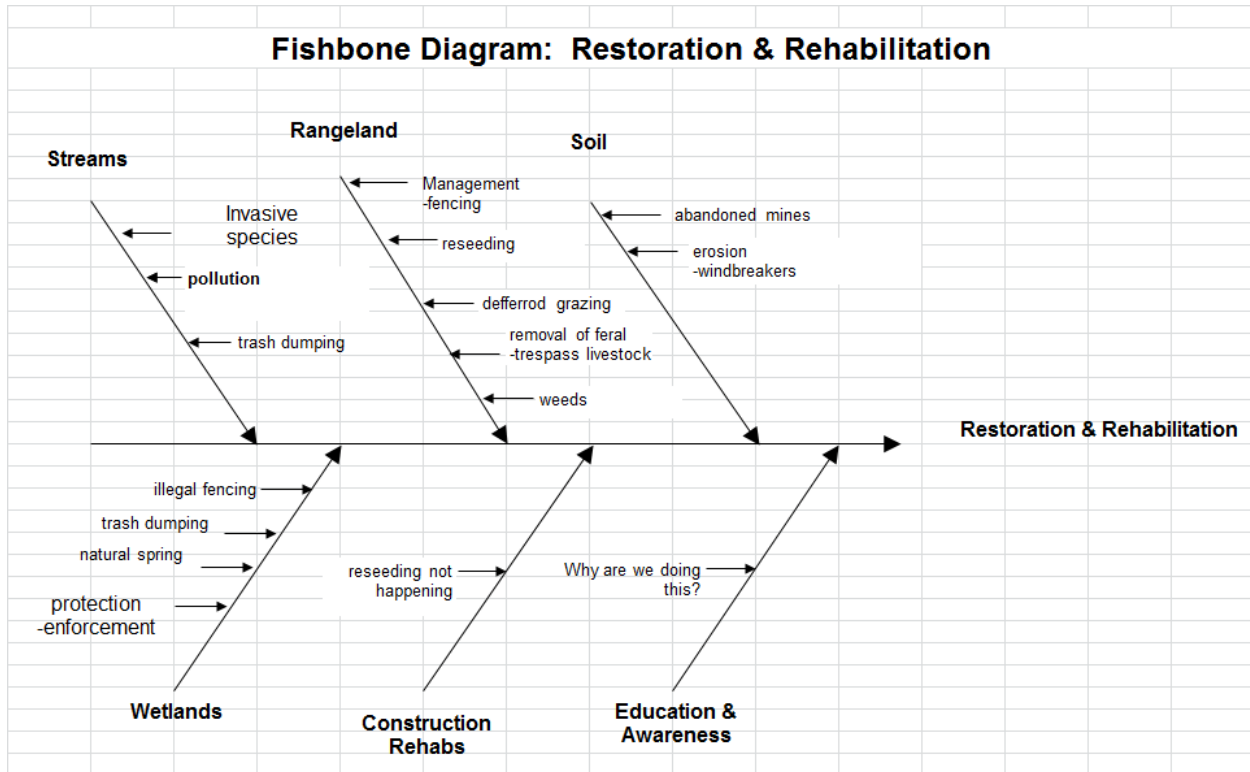
Fishbone Diagram: Communication



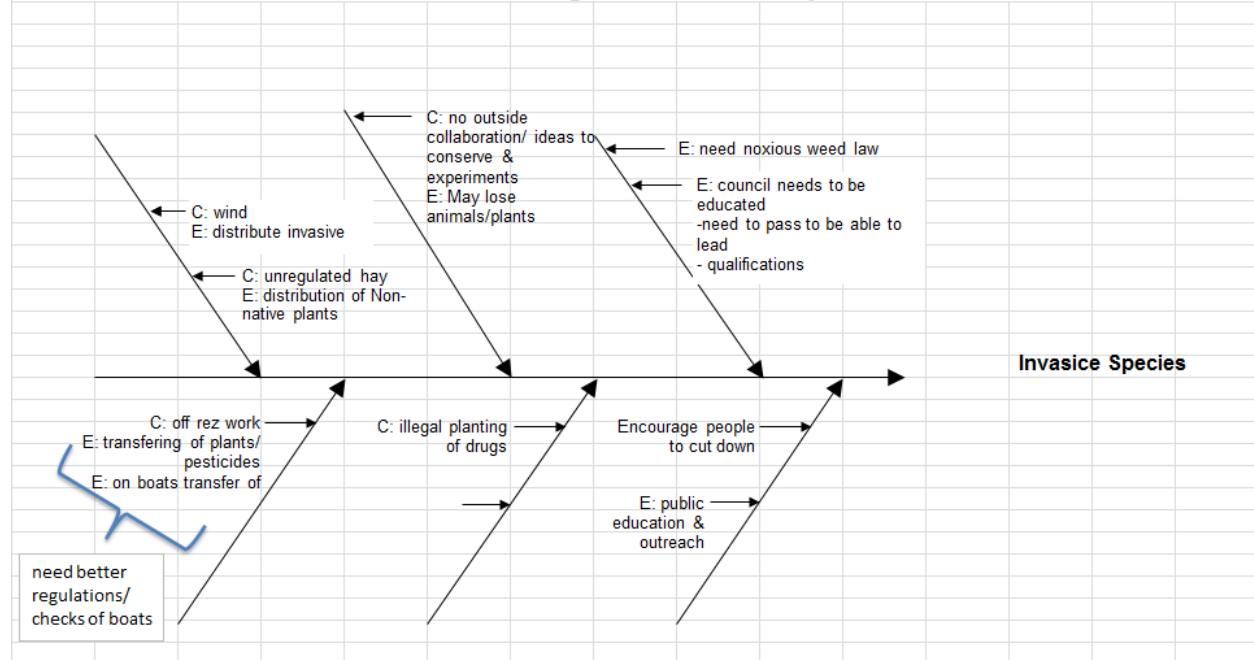




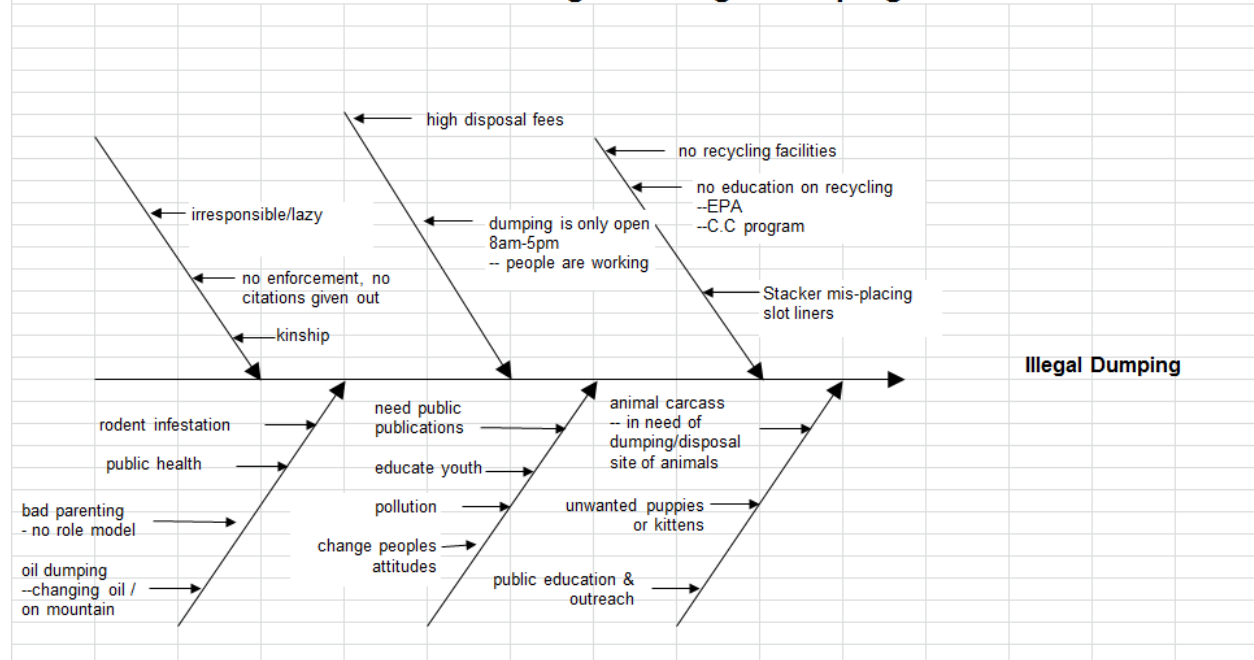


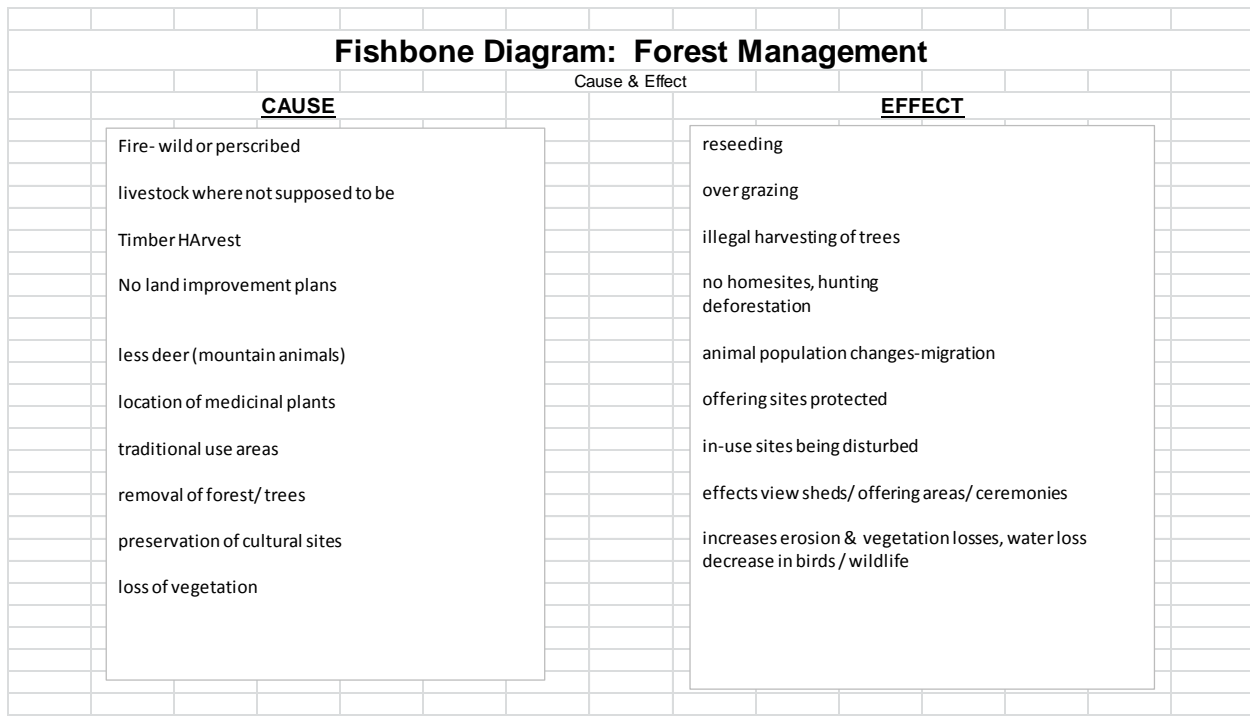
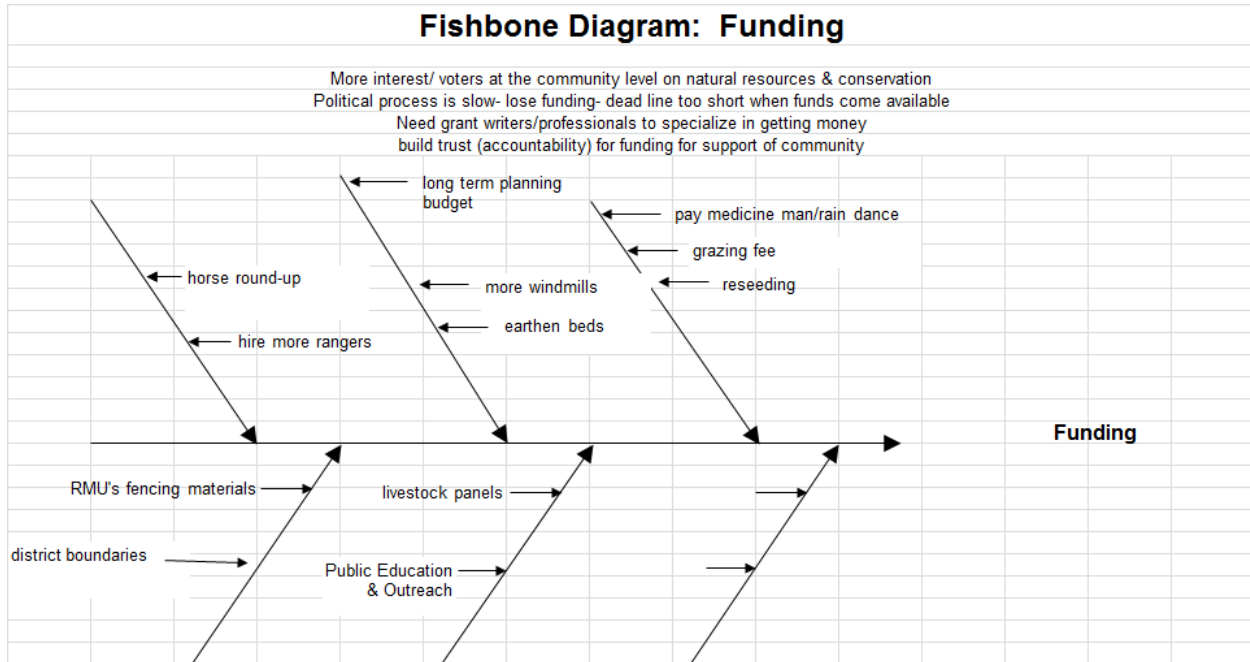


Fishbone Diagram: Invasive species

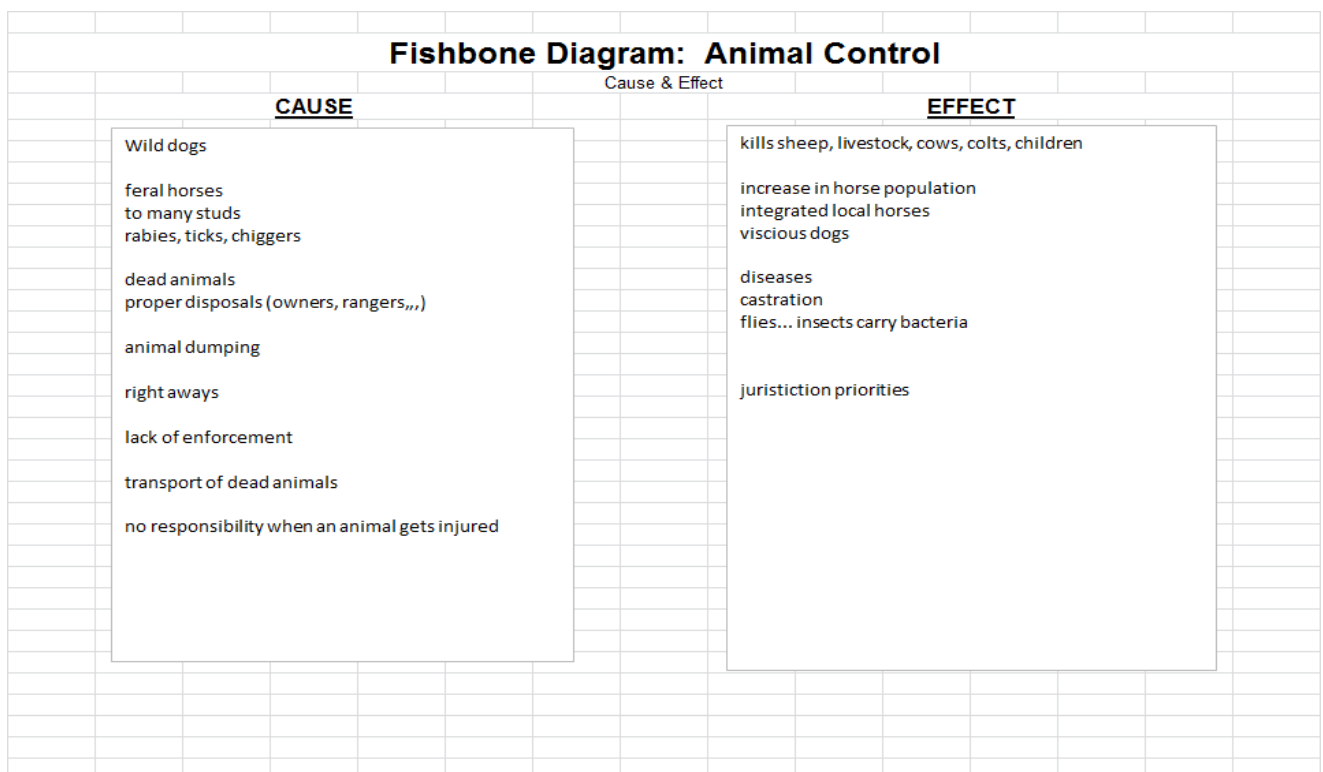
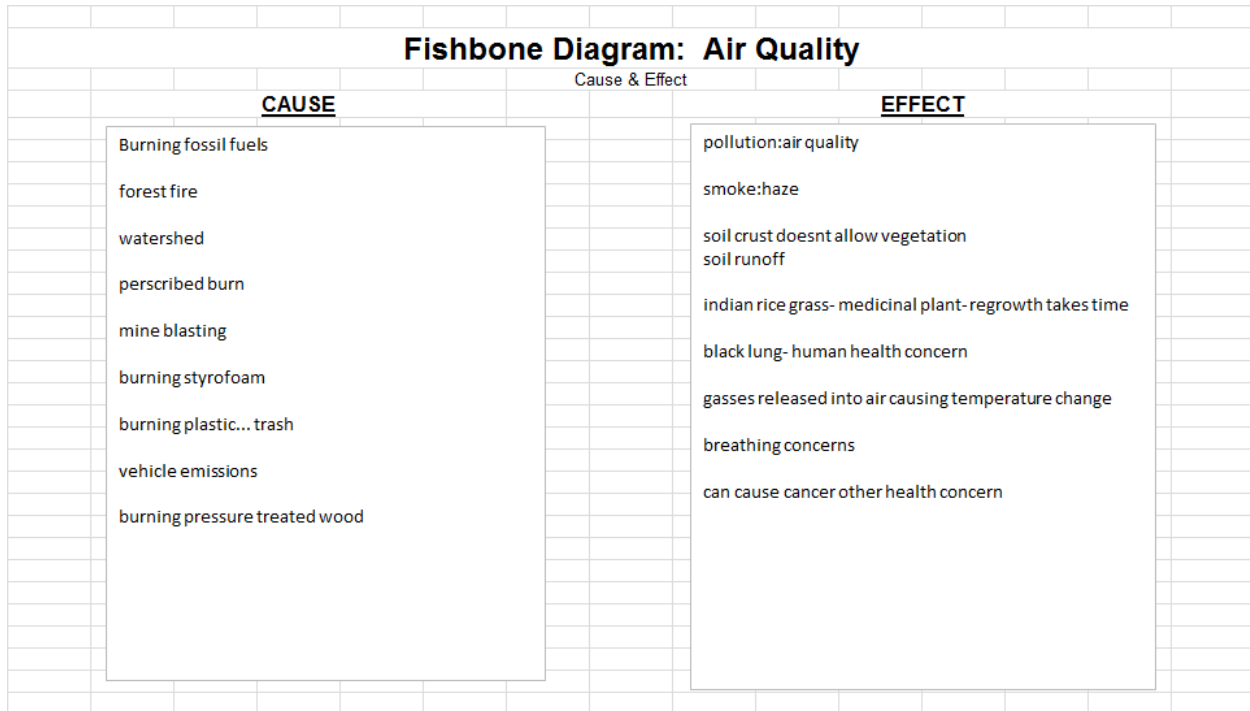


Fishbone Diagram: Illegal Dumping





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