

# Orientation

# Research

## WNC hurricane disaster - Helene

### Notes/orientation

[[Link to DRI Planning Doc](#) for convenience]

Yellow targets are the priority targets

Green targets are ones that are completed [some are in this shade of green]

Note: We can each take a color of ink in these docs for notes if we want to keep it simple.

Koreen is purple. We can also of course use the “suggest” features.

Rhonda is teal. Zan is whatever this color is (burnt orange?)

### We Regenerate database

I've created a spreadsheet where we can plug in resources for regenerative resilience. This can end up in the online database weregenerate.earth once we decide how we want to publicly display it. Keywords will help people find the resource so fill them in where you can. I'm leaving some of the columns blank for now just because of time constraints. We can sort things and choose what we enter into the public version. This can be our own resource though. Please note that all of the columns have a use, and we need to enter data in the same way per column. For instance, phone numbers should have nothing but the numbers themselves. No dashes, etc. So please pay attention to those details when entering. I've included notes to clarify some of the columns. Let me know what isn't clear, please!!

<https://docs.google.com/spreadsheets/d/1uNVaBQuYxFz4uXAXkXK9IfYVCj1sgBxP5y6rmEJyEI/edit?gid=0#gid=0>

### Educational resources

Any education resources, however (youtube videos, narratives, drawings, etc) can be posted here. This has been a research “dump” but I'm transitioning it over to vetted material only, the higher quality stuff that can go into the library or even manuals.

For now, I've noted the topics I'm focusing on by using the “Title” heading in the table of contents. Makes it easy to find. Please let me know if there are other things we should be focusing on as well.

Idea: Calling “solutions” “response” instead - makes it more flexible and responsive? “Adaptive solutions” perhaps, to show the evolving nature of the situation.

We’re designing regenerative pathways by which beneficial relationships can occur, between humans and nature, and humans and other humans.

Leading each section with principles is important. These shouldn’t hugely change. Some of the specific solutions we list are likely to evolve.

## Categorizing/keywords

This is an ongoing learning process. How will people search for things? What keywords will they use? Some words are accepted in related fields and we should use those.

Some things we may want to isolate and highlight with keywords (are these the best to use?):

**How to’s** - resources that give step by step or otherwise coherent maps/instructions on how to implement some aspect of regenerative management. How can we highlight? With keywords like DIY, How-to?, Instructions or ?? I’m using “How to” for now.

**Study** - some will want these more authoritative sources tagged. If not a peer reviewed study but still relevant, perhaps the term “**research**?”

**Case studies/stories** - valuable to see how others did it successfully. Also valuable to see what doesn’t work.

**Disaster nomenclature** - Which element of disaster management is it? Prevention, preparation, mitigation, response, recovery. [These are all tags in Omeka] Should we label everything with keyword disaster management? [They are also all in the DRI collection. The authorized LC subject header is “Emergency management.” Which I can indeed add to everything in the collection if that sounds okay. ] Yeah, emergency management is even better than disaster management because it encompasses slow situations and acute situations both. Any other disaster terminology we want to include?

**Overall categories** - We have isolated major categories of disasters and response which we can create sublibraries for. What did we miss that is a major subcategory?

What keywords are we omitting?

# Lee's resources

List of categories/subcategories at top: GENERAL DISASTER DATA, LANDSLIDES/GEOLOGY; etc.

## NC State Climate Report

<https://l.facebook.com/l.php?u=https%3A%2F%2Fncics.org%2Fprograms%2Fnccsr%2F&h=AT0TTaBdQTZ0E6e0J81hjTObyhbJdKK3RRibQZ0NCb9nQqI3O1X2e3gvfx2Wqv-x4FrYHqNyg9O438e51eEw2Nxwp1rse4md9GWU8kqnPfQER6biLWENHYdTE5UjfrorUiTGO9hCyG0P9aIB2D7VpD8T5Q&s=1>

**Emailed from Lee: [files, not links] on 12/26/2024**

- [1985 State Geologic Map](#)
- [Hydrogeological Site Characterization 2004](#)
- [Buying/Building Mountain Home](#) (this was a webpage from the now defunct WNC Tomorrow organization - found an archived copy on the Internet Archive and added it.)
- [PcHurricane Prep Text](#) [this is Koreen's guide - waiting on edits and already added the current one on the website]
- **4 Seed Saving** publications [Note - found the publications at various locations online. Linking there rather than work through copyright]
  - [https://www.carolinafarmstewards.org/wp-content/uploads/2012/05/BeanSeedProductionVer\\_1pt4.pdf](https://www.carolinafarmstewards.org/wp-content/uploads/2012/05/BeanSeedProductionVer_1pt4.pdf)
  - [https://www.carolinafarmstewards.org/wp-content/uploads/2012/05/IsolationDistancesVer\\_1pt5.pdf](https://www.carolinafarmstewards.org/wp-content/uploads/2012/05/IsolationDistancesVer_1pt5.pdf)
  - <https://www.ces.ncsu.edu/wp-content/uploads/2013/06/Saving-Heirloom-Tomato-Seeds.pdf?pwd=no>
  - <https://www.scribd.com/document/52606443/From-Generation-to-Generation-Seed-Saving> [at scribd, so not free. If there's no free source (I can't find one), see if we can get permission to use this (maybe not, since someone is making money off it):
    - From Generation to Generation: An Activity Guidebook in the Living Tradition of SEED SAVING by Eli Rogosa Kaufman (growseed@yahoo.com).
- workshop handouts (MS Word docs - make into PDFs then upload) - NOTE: putting all 3 as one item with multiple files
  - [Seed saving resources from Feb 2004 workshop \[updated links on Jan 7, 2025\]](#)
  - [Seed saving handout tomato, bean, lettuce et](#)
  - [Seed saving terms handout](#)



Updated needs/data:

Dec 18: <https://www.facebook.com/reel/1245779360034857>

# Design Thinking & Questions

# Design concepts

References on systems thinking for mitigating disasters.



***“When a complex system is far from equilibrium, small islands of coherence in a sea of chaos have the capacity to shift the entire system to a higher order.”***

*Ilya Prigogine,  
Nobel Prize-winning chemist*

Describing systems thinking to the public

<https://donellameadows.org/archives/system-dynamics-meets-the-press-a-few-good-concepts-can-make-a-big-difference/>

<https://www.millennium-institute.org/>

Millennium Institute's iSD Simulator for integrated policy analysis and planning (multisolving!), which won the System Dynamics Society Application Award in 2017.

Regenerating landscapes with whole systems thinking

[https://www.resilience.org/stories/2022-06-22/learning-not-diamond-class-carbon-markets-is-the-bridge-to-landscape-scale-regeneration/?fbclid=IwY2xjawH7ByVleHRuA2FlbQlMQABHar9NSznL-YQsPXjhxzfXzTxEapwRnUDALpi5n-7o311NRaHpQG\\_F\\_-YTQ\\_aem\\_tY6B6a\\_Qdg5YIV0St5q0Tg](https://www.resilience.org/stories/2022-06-22/learning-not-diamond-class-carbon-markets-is-the-bridge-to-landscape-scale-regeneration/?fbclid=IwY2xjawH7ByVleHRuA2FlbQlMQABHar9NSznL-YQsPXjhxzfXzTxEapwRnUDALpi5n-7o311NRaHpQG_F_-YTQ_aem_tY6B6a_Qdg5YIV0St5q0Tg)

# General Ecological Information

# General - climate, overview

## Climate change

<https://Firststreet.org> - climate risk assessment tool (this is used by realtor.com, redfin and other realty companies - individual addresses can be searched via any of these companies to see First Street's predictions. There are sources that are likely more accurate but this gives some idea.

Review showing climate mitigation is cheaper than recovery

[https://en.wikipedia.org/wiki/Stern\\_Review](https://en.wikipedia.org/wiki/Stern_Review)

Education - comic books for kids

<https://www.preventionweb.net/knowledge-base/type-content/school-materials>

US Climate Resilience Toolkit

<https://toolkit.climate.gov/>

## Weather resources

General weather

<https://noaa.gov>

Hurricane tracker <https://www.nhc.noaa.gov/>

Chris Hall ya'll (provides live data from multiple sources before and during hurricanes or other weather disasters)

<https://www.youtube.com/@606stormchasing>

Economic costs of disasters

<https://www.climate.gov/news-features/blogs/beyond-data/2023-historic-year-us-billion-dollar-weather-and-climate-disasters>

## General climate data

Climate, soil, crop suitability

<https://www.canopycompass.com/>

# Biodiversity

Why biodiversity is important, why it is so much higher in some regions, world maps of biodiversity.

[https://3quarksdaily.com/3quarksdaily/2025/01/biodiversity-latitude-and-conservation-an-essay-on-ecological-patterns.html?fbclid=IwZXh0bgNhZW0CMTEAAR0fR0MZrQAJzfjaQc-n6C1LEO9hOLXexc-yjBhW-kdbXEjO1BcAjhOciW0\\_aem\\_zstQCqgHqYo-s88Qxlt\\_Jw](https://3quarksdaily.com/3quarksdaily/2025/01/biodiversity-latitude-and-conservation-an-essay-on-ecological-patterns.html?fbclid=IwZXh0bgNhZW0CMTEAAR0fR0MZrQAJzfjaQc-n6C1LEO9hOLXexc-yjBhW-kdbXEjO1BcAjhOciW0_aem_zstQCqgHqYo-s88Qxlt_Jw)

# Challenges

# General disaster data

This is orientation to how disaster management is approached in the US (and elsewhere in some cases)

Disaster Glossary (compiled by Koreen)

[https://docs.google.com/document/d/14LSUmej78yvFRXEGvg\\_erC4FazghuBd6pqSm4j4SNLU/edit?tab=t.0#heading=h.fnp6w5wu9bks](https://docs.google.com/document/d/14LSUmej78yvFRXEGvg_erC4FazghuBd6pqSm4j4SNLU/edit?tab=t.0#heading=h.fnp6w5wu9bks)

Glossaries

<https://www.fema.gov/pdf/plan/glo.pdf>

<https://training.fema.gov/emiweb/is/icsresource/assets/glossary%20of%20related%20terms.pdf>

<https://ccaaha.org/resources/emergency-management-terminology>

<https://www.azdhs.gov/documents/licensing/childcare-facilities/preparedness/emergency-preparedness-glossary.pdf>

<https://www.cahf.org/Portals/29/DisasterPreparedness/EOPs/glossary.pdf>

Acronyms

<https://www.sjf.edu/book/emergency-response-plan/list-of-acronyms-and-glossary/>

[https://ahca.myflorida.com/content/download/5074/file/Disaster\\_Glossary.pdf](https://ahca.myflorida.com/content/download/5074/file/Disaster_Glossary.pdf)

Basic disaster response training

[https://training.fema.gov/emiweb/downloads/is111\\_unit%204.pdf](https://training.fema.gov/emiweb/downloads/is111_unit%204.pdf)

<https://ecajmer.ac.in/facultylogin/announcements/upload/DISASTER-MANAGEMENT-CYCLE%201.pdf>

[https://www.uncp.edu/sites/default/files/2024-08/EOP%20-%20Appendix%202%20-%20The%20Five%20Phases%20of%20Emergency%20Management%20FINAL\\_07%2015%2013.pdf](https://www.uncp.edu/sites/default/files/2024-08/EOP%20-%20Appendix%202%20-%20The%20Five%20Phases%20of%20Emergency%20Management%20FINAL_07%2015%2013.pdf)

(Note these guys do not focus on design as a key component of any of this, nor do they focus on prevention of disasters. Mitigation is as far as they will go, generally, except for the uncp example. Included to illustrate inadequacy of their approach/communications)

“Disaster is a function of three things: exposure, vulnerability, and hazard.

As climate change pushes up the hazard rates for wildfire, flood, hurricane & more, lack of adaptation and maladaptation on the part of both public and private entities is increasing vulnerability.” Katherine Hayhoe

<https://bsky.app/profile/katharinehayhoe.com/post/3ldlgvobyts2h>

This is one of the more thorough approach I’ve found and a good definition of “disaster management” [https://nidm.gov.in/PDF/Disaster\\_about.pdf](https://nidm.gov.in/PDF/Disaster_about.pdf)





<https://www.researchgate.net/publication/46524908> Disaster Management CYCLE - a theoretical approach

General ecological data

<https://guides.lib.berkeley.edu/VegMaps/NorthAmerica>

## Disaster Management resources/infrastructure

UNDRR toolkit

[https://media2-production.mightynetworks.com/asset/b3b03900-047d-48b9-a2a7-98da29c289b7/UNDRR\\_NBS\\_Toolkit.pdf](https://media2-production.mightynetworks.com/asset/b3b03900-047d-48b9-a2a7-98da29c289b7/UNDRR_NBS_Toolkit.pdf)

<https://www.undrr.org/media/97918/download?startDownload=20241218>

Tool #2 includes keywords for nature based solutions from UNDRR  
<https://www.undrr.org/media/97918/download?startDownload=20241218>

Who does UNDRR interface with? (good look at disaster management players/infrastructure)  
National-level policymakers leading the development and coordination of the national disaster risk reduction strategy.

- **Government officials**, including those from the sectoral and line ministries, at national and local levels, who implement DRR measures through various means and at various levels.
- **National and local disaster risk reduction practitioners** from the development sector and non-state stakeholders who contribute to the process of developing and implementing the national DRR strategy and support its alignment with local DRR strategies / action plans.
- **Disaster risk management and climate change practitioners** at the regional and global level who will support the integration of DRR and climate change adaptation in support of the achievement of the SDGs by 2030.
- **Technical experts** from all sectors with a wide range of thematic specializations (e.g. multi-hazard risk assessments, critical infrastructure, climate change adaptation, agriculture resilience, land-use planning, social vulnerability, insurance and financial risk transfer mechanisms, emergency preparedness, gender, national statistics and results-based management, etc.) who are contributing their expertise to ensure the development of a comprehensive DRR strategy that effectively supports risk-informed development.
- **Regional inter-governmental organizations** who support their member states in the development of a national DRR strategy aligned with a sub-regional DRR policy, normative framework and roadmap, as well as regional DRR strategies / frameworks adopted at regional platforms for DRR.

<https://www.undrr.org/publication/ecosystem-based-disaster-risk-reduction-implementing-nature-based-solutions-0>

Disasterology, a newsletter about the state of disaster management  
<https://disasterology.substack.com/>

## Site assessment research - damage

This is the site assessment data, and does not include solutions, which are below.

- What happened?
- How bad is the damage?
- What are the factors that caused it?

- How can we predict future risks/opportunities based on this data?
- What are the current opportunities and challenges?

## Overall situation

<https://www.youtube.com/watch?v=J53T7Cvw6wo>

Why so few Americans live in appalachia

<https://www.youtube.com/watch?v=zXIKtMeIUgM>

Is there a risk assessment for the region?

Elements that contributed to the disaster, including mountaintop strip mining

<https://news.vt.edu/articles/2024/10/responding-to-hurricane-helene-s-lingering-impacts-on-appalachia.html#:~:text=This%20was%20a%20one%2Din.just%20too%20much%20too%20fast>

## Debris flows and mud slides

After the fire: Rain on wildfire burn scars can trigger deadly debris flows

<https://theconversation.com/after-the-fire-rain-on-wildfire-burn-scars-can-trigger-deadly-debris-flows-a-geologist-explains-how-247770>

Drone footage of landslides

<https://www.facebook.com/reel/925851055546736>

Write up from Douglas Kent

Having worked on post-fire recovery since 1996, here are my recommendations for Fire First Aid:

### 1. Minimize Traffic

Keep foot and equipment traffic off burnt landscapes. Activity on slopes will increase the likelihood of erosion by weakening a soil's bonds, dislodging soil particles, and trampling just

sprouted plants. Activity on flat ground can compact the soil and lower its water absorption rates, which increases runoff.

## 2. Leave the Mess

Do not clean your landscape—the debris on your injured site provides much needed protection. The charred remains of plants and garden features protect the landscape from wind and water erosion, slows sheeting water, and helps prevent the surviving seeds and plants from drying out. Do not remove debris until a restoration plan has been developed.

## 3. Drain Water

Drainage systems will be clogged with debris after a fire. Water skipping out of drains, such as swales, is a leading cause of erosion, fire or not. Roof gutters, street gutters, culverts, swales, infiltration and detention basins, small streams, and concrete waterways will need cleaning. This is the very first thing to do.

## 4. Divert Sheeting Water

The chances of topsoil loss dramatically rise if a landscape receives sheeting water from nearby features. Driveways, roadways, sidewalks, and parking lots are often designed to sheet their runoff to the landscape. If this is the case on your property, divert that runoff away from the landscape and towards the storm drain system.

Diverting devices include bales, check dams, diversion ditches, dry stacked walls, staked boards, and sandbags.

## 5. Watering

A recently burned landscape will absolutely need water, but there are two distinct types. The first immediate watering is aimed at breaking the soil's repellency layer. This watering is light—no more than 1 gallon per 10 sq ft. The goal is to water only the top quarter inch of soil.

Once the repellency layer is broken, begin deeper waterings. The goal is to get the water 4 inches deep and encourage seeds, roots and surviving plants to sprout. Three to 5 gallons of water per 10 sq ft will be required. Water again only when the first 2 inches have dried.

## 6. Assess Your Risk of Topsoil Loss

Determining the levels of erosion risk not only helps prioritize recovery resources, but also helps determine the aggressiveness of your response. The erosion test below provides indicators to the likelihood of topsoil loss, but for an accurate analysis of risk consult a local Certified Professional Soil Erosion and Sediment Control Specialist (CPESC).

### a. Slope

A slope's degree of incline has the greatest influence on its chances of producing erosion. The incline and length of a slope are two measurable factors. Although slopes have a higher risk of erosion, flat ground is susceptible too. Scorched and bare landscapes are easily compacted and prone to puddling and sheeting water, contributing to erosion elsewhere.

#### Steepness of Slope

- o 1 Point: Between 0 -16%: Not Likely
- o 2 Points: Between 17% - 34%: Low Likelihood
- o 4 Points: Between 35% - 51%: Likely
- o 8 Points: Between 52% - onward: Most Likely

#### Length of Slope

- o 1 Point: 0 - 25 feet
- o 2 Point: 26- 50 feet
- o 4 Points: 51 - 100 feet
- o 8 Points: 101 - 200 feet

#### b. Rain

How a burnt landscape reacts to storms depends on the amount of time between the fire and the first rain and the rain's intensity and duration.

- o 1 Point: A late autumn sprinkle with light to moderate storms through remaining season.
- o 2 Points: Late autumn sprinkle with heavy winter downpour.
- o 4 Points: No autumn rain and heavy winter downpour.
- o 6 Points: Heavy early autumn and winter downpour.

#### c. Type and Density of Plants Burnt

This is a forest versus grasslands comparison. You are looking at two measures: the amount of debris littering the landscape and the amount of plants remaining that can resprout.

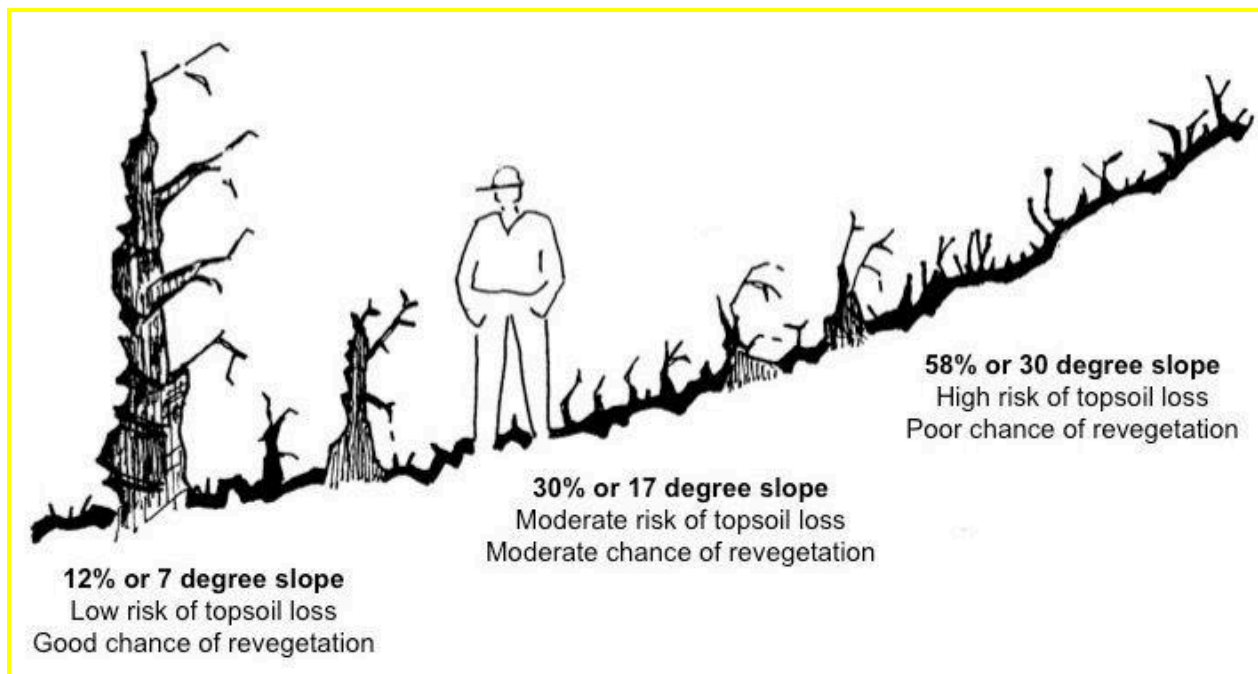
- o 1 Point: Formerly densely forested landscapes. Trees had shrubs and possibly ground covers growing below them.
- o 2 Points: Formerly a landscape with scattered trees and no understory shrubs, or a landscape with only shrubs and ground covers. Oak woodland and coastal scrub communities are examples.
- o 3 Points: Formerly a grassy landscape with scattered perennials.

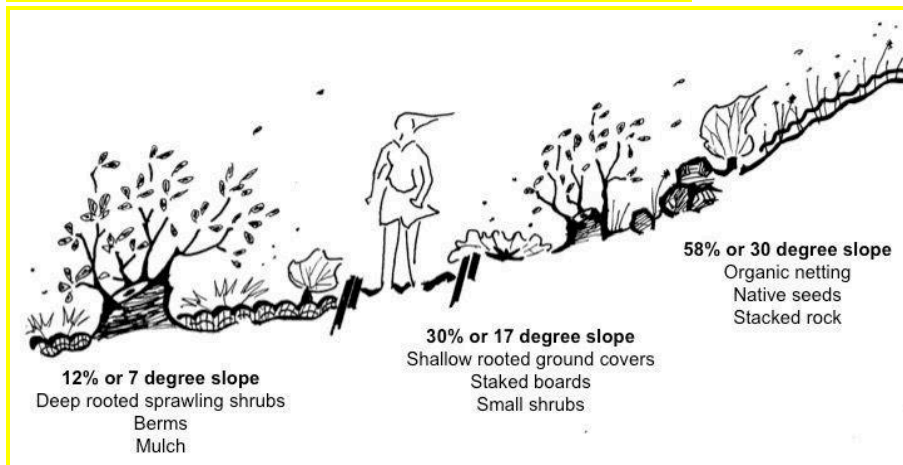
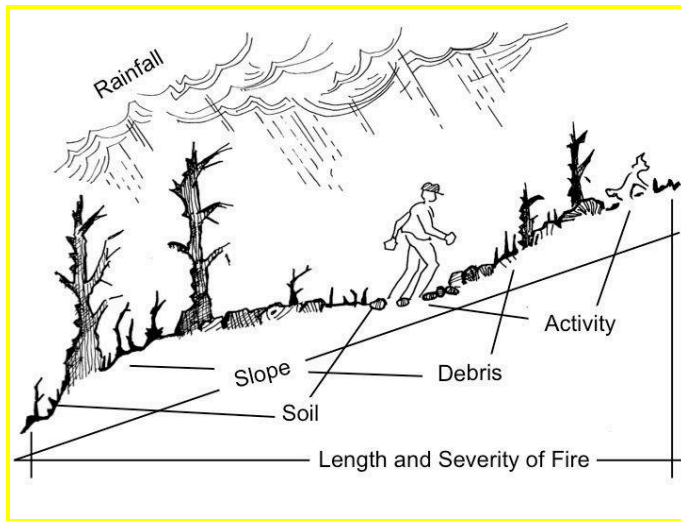
o 4 Points: Formerly a landscape with tough and difficult growing conditions. Plants are shallow rooted, sprawling and sparsely planted.

#### d. Type of Soil

The structure, density and size of a soil's particles influence its likelihood of erosion. Clay soils are the least erodible, sand and gravel the most. But clay soils have other problems: they are much faster to produce runoff due to poor infiltration, and this leads to the washing of fine particles and the siltation of streams. Sand and gravel do not travel like clay.

- 1 Point: A soil dominant in clay that has silt, sand and/or organic matter.
- 2 Points: A sandy soil mixed with silt and organic matter.
- 3 Points: A clay soil with little or no organic matter.





## Flood risk

Water off of the roof, moving it off the area. Exit valve from rain tanks. "Asheville was well-known as a flood risk zone including from hurricanes:

Tropical Cyclone Flooding in the Carolinas. In Journal of Hydrometeorology 23:1 (2022): <https://journals.ametsoc.org/.../23/1/JHM-D-21-0113.1.xml>

Keywords: Hurricane damage, Carolinas, Flooding, historical data, assessment

And

Evaluation of Changing Characteristics of Temporal Rainfall Distribution within 24-Hour Duration Storms and Their Influences on Peak Discharges: Case Study of Asheville, North Carolina

<https://ascelibrary.org/.../%28ASCE%29HE.1943-5584.0001575>

“The forecasts and projections were exceptionally good. People not listening to forecasts and projections, or not having options to listen, is the problem. Hence, disasters are caused by vulnerabilities (often forced) rather than hazards, even where those hazards are influenced by human-caused climate change.”

<https://www.politico.com/news/2024/10/03/helene-climate-western-north-carolina-00181959>

Keywords: economic damage, insurance, flood damage, disaster prediction, disaster forecasts, human impact (better term for this? “Impact on humans” is more accurate but a clunky keyword)

Building codes

Study on what local gov’t can do about this

<https://hazards.colorado.edu/mitigation-matters-report/zoning-for-flood-risk-reduction-in-five-virginia-communities>

<https://www.nytimes.com/2024/10/03/climate/north-carolina-homes-helene-building-codes.html>

, like so many of us, am trying to wrap my head around the catastrophic damage that occurred in Western North Carolina and the Southeastern United States as a result of Hurricane Helene. The images of the flooding and damage are literally unfathomable. And what I realized is that I don’t think the United States has ever been impacted by a storm that produced precipitation of this extreme magnitude.

I am a Water Resource Engineer with expertise in hydrology and was blown away by the precipitation totals from this storm. The observed maximum precipitation depth in Busick, NC was approximately 31.2 inches of rain that fell in a 72-hour (or 3-day) period (not accounting for the precipitation that occurred leading up to the Helene event).

Pulling data from NOAA Atlas 14 <https://hdsc.nws.noaa.gov/pfds/> I confirmed the 1000-year storm event for Busick, NC has a 3-day storm depth of 15 inches. This means Helene produced two times the amount of precipitation associated with a 1000-year storm. Since the relationship between precipitation depth and recurrence interval is exponential, this would be a much larger event than simply estimating it as a 2000-year storm event. I graphed the various recurrence intervals and corresponding precipitation depths to



formulate a trendline to extrapolate the recurrence interval for Helene. This rough estimate yielded a Hurricane Helene storm recurrence interval of approximately a 30,000-year storm event. This QPF area is shown as blue in the exhibit and labeled as >1000 yr. By comparison, I read an estimate that the precipitation associated with Hurricane Katrina was a 400-year storm event and Hurricane Harvey in Houston was a 2000-year storm.

Water Resource and Civil Engineers typically utilize the 100-year storm event to design roads, bridges, and structures elevated at or above this elevation. The fact that Hurricane Helene was so many orders of magnitude above this design storm, and I think any prior storm that has previously impacted the US, highlights why there is so much devastation and destruction from Helene.

Please feel free to share and pray for those suffering from this cataclysmic storm. I anticipate that once the losses are realized, this will be the deadliest natural disaster in US history as there are currently remote areas of the Appalachians that are totally cut off with no ability to escape and no access to food, water, medicine, and supplies. Find more information and please consider donating or volunteering at <https://hurricaneheleneunc.com/>

## Water quality/access

Turbidity is a huge issue. (what about turbidity curtains - low tech and local?) Turbidity curtains have been installed at North Fork reservoir, and in-reservoir treatment continues to take place through the end of the day today (Oct. 31). Though the overall turbidity of the reservoir remains high, levels continue to drop. As of Wednesday, the turbidity level at North Fork was 21.2 NTU. In order to be safe for the normal treatment process, turbidity needs to fall somewhere 1.5-2 NTU. The turbidity curtain and treatment operation is intended to speed up the drop in turbidity. Water Resources will work over the weekend to measure the effectiveness of the turbidity curtain operation and will update the public on Monday, November 3.

<https://www.citizen-times.com/story/news/local/2024/12/09/buncombe-helene-recovery-north-fork-turbidity-lead-testing-more/76860668007/>

Water access during fire

[https://laist.com/news/climate-environment/why-did-pacific-palisades-water-hydrants-run-dry?fbclid=IwZXh0bgNhZW0CMTEAAR2p8EqqFZXwQlzbP-tz7yA-yeWXAbsYkxUzOfQ88YPqIMG6nnSQTqnPEBU\\_aem\\_p7Vz2xtfloVCYnyMRs-GQ](https://laist.com/news/climate-environment/why-did-pacific-palisades-water-hydrants-run-dry?fbclid=IwZXh0bgNhZW0CMTEAAR2p8EqqFZXwQlzbP-tz7yA-yeWXAbsYkxUzOfQ88YPqIMG6nnSQTqnPEBU_aem_p7Vz2xtfloVCYnyMRs-GQ)

Our observational constraint indicates that at least  $21\% \pm 3\%$  of precipitation recharges groundwater, which is approximately double the figure reported in the Sixth Assessment Report of the United Nations Intergovernmental Panel on Climate Change. Thus, our

research suggests a more active role of groundwater in the global water cycle than most Earth system models currently simulate.

[https://www.nature.com/articles/s41561-024-01483-5?fromPaywallRec=false&fbclid=IwZXh0bgNhZW0CMTEAAR3yOZKCgH-kGzbrktIWuD2dCUyFag0tIR1jjlXHQWSesDCGNAeiPJNIHow\\_aem\\_bbQPWxE\\_HnSMQXwFFvALiQ](https://www.nature.com/articles/s41561-024-01483-5?fromPaywallRec=false&fbclid=IwZXh0bgNhZW0CMTEAAR3yOZKCgH-kGzbrktIWuD2dCUyFag0tIR1jjlXHQWSesDCGNAeiPJNIHow_aem_bbQPWxE_HnSMQXwFFvALiQ)

## Pollution/toxins/mold

Less toxins than expected - soil test results

<https://www.citizen-times.com/story/news/madison/2024/11/13/mountaintrue-more-post-helene-soil-water-samples-around-french-broad/76228336007/>

Mud is full of toxins. This person may be wrong

<https://www.facebook.com/reel/1089844296077417>

Reducing toxins

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/reducing-environmental-toxins-with-dr-devra-davis-video/>

Pollution after fire

<https://theconversation.com/after-maui-fires-human-health-risks-linger-in-the-air-water-and-even-surviving-buildings-211404>

## Wind/tree damage

<https://www.forwnc.org/resources/helene-media-map>

<https://wapo.st/4elscqf> (map of tree damage, free WaPo article)

Keywords: Wind damage, assessment, hurricane

Tree loss from wind, example (we need a study or larger perspective than one ridge)

<https://www.youtube.com/watch?v=1Q-zq4QOEew>

<https://www.facebook.com/lauren.murray.902/videos/1685049388947024/>

**Wind resistant trees.** LSU has done a study about which trees are good for this. Bob Randall.

South: Bald cypress, wax myrtle, coastal live oak, sabal palms, bamboo; small leaves, don't fall in heavy winds. Trees that fell on roofs kept the roofs on in cat 4-5 hurricanes.

# Fire

Fire map (where are the fires?)

<https://inciweb.wildfire.gov/> (daily incident reports for specific fires)

<https://protect.genasys.com/>

Western US/Calif

<https://app.watchduty.org/>

<https://www.fire.ca.gov/>

<https://ncfspublic.firesponse.com/>

[https://firms.modaps.eosdis.nasa.gov/usfs/map/?fbclid=IwZXh0bgNhZW0CMTAAAR2co-8IRWV/Kz3AEwOrPV9wCEuf\\_t0bNF2SamfCliBSXF3A7zgAgwoBbDvY\\_aem\\_aLuL7AHkpPulAhad4fmiw#d:24hrs;@-118.07,34.18,14.00z](https://firms.modaps.eosdis.nasa.gov/usfs/map/?fbclid=IwZXh0bgNhZW0CMTAAAR2co-8IRWV/Kz3AEwOrPV9wCEuf_t0bNF2SamfCliBSXF3A7zgAgwoBbDvY_aem_aLuL7AHkpPulAhad4fmiw#d:24hrs;@-118.07,34.18,14.00z)

Fire app for western states

<https://www.watchduty.org/>

<https://livingatlas.arcgis.com/wildfireaware/#ext=-118.110,34.181,16,loc=>

Climate change exacerbates fire damage - study

<https://www.pnas.org/doi/abs/10.1073/pnas.2213815120>

What increases the risk of fire: The fire scientist Mike Flannigan of [Thompson Rivers University](#) describes it straightforwardly as a matter of fuel load, ignition and fire weather (dry heat, wind, etc).

Two reasons given for doubling fire acreage burned in recent years:

Climate change

Suppressed burning “According to [some estimates](#), 20 million acres in California need to burn for its forest to re-equilibrate, an area nearly one-fifth of the state”

**Also:** It surely would have been wiser not to have built so many California homes in areas of high and growing wildfire risk — accounting for [nearly half](#) of those built in the state between 1990 and 2010

[https://www.nytimes.com/2024/02/14/climate/wildfire-climate-change-urban-firestorm.html?smid=nytcore-ios-share&referringSource=articleShare&fbclid=IwZXh0bgNhZW0CMTAAAR3HeTjBE8fNYZlacQB-oV9qnoDoncwpNVYk-1n3Tqh1cJkicbY\\_UXtarRo\\_aem\\_XzoCwyQ1alw8nXGaE20o4g](https://www.nytimes.com/2024/02/14/climate/wildfire-climate-change-urban-firestorm.html?smid=nytcore-ios-share&referringSource=articleShare&fbclid=IwZXh0bgNhZW0CMTAAAR3HeTjBE8fNYZlacQB-oV9qnoDoncwpNVYk-1n3Tqh1cJkicbY_UXtarRo_aem_XzoCwyQ1alw8nXGaE20o4g)

Containment vs confinement

What's all this talk about containment?? #RattlesnakeBranchFire

If you live in an area prone to wildfires, one phrase you always listen for is "the fire is (x) percent contained." A fire that is 95% contained sounds a lot less scary than a 5% contained fire. That's the main reason we feel the need to explain containment on the #RattlesnakeBranchFire, because it's a bit different and confusing.

“Containment” usually indicates how much of the fire has been surrounded by a control line that will not allow progression of the fire. Rather than describing how much of the entire fire has been put out, containment refers solely to the perimeter itself and its potential for growth. On the maps, a red color indicates uncontained fire perimeter, and black is contained fireline.

Containment is normally expressed as a percentage of the entire perimeter (the percentage of the perimeter that is black compared to the entire perimeter). Fire managers will not label a portion of the fireline “contained” until they are confident that the fire will stop at that line.

A large portion of Rattlesnake Branch Fire is burning in the Shining Rock Wilderness area in Pisgah National Forest. Not only are there restrictions to firefighting tactics in a wilderness area, but also this area is very inaccessible for the most part. The benefits of suppression efforts simply don’t outweigh the risks to firefighters to justify making an attack of the fire due to the hazards, steep terrain, and inaccessibility. It would be difficult to mitigate the amount of hazards for firefighters.

No doubt, we need to make sure this fire doesn’t come out of the wilderness area and impact private land and structures. And, we are committed to doing just that.

So the tactic in the wilderness area is to “confine” the fire to the wilderness area. We will establish dependable, defensible lines OUTSIDE the wilderness area, in case the fire manages to progress that far. But, we really expect it to simply die out in the wilderness area and never reach those lines.

So, the area within the wilderness will utilize a “confine strategy.”

Of the total acreage of the fire, 72% is in wilderness and is in confine strategy. The area outside the wilderness area comprises only 28% of the total acreage and is in full suppression strategy. So (this is the confusing part...) the percent containment we are reporting applies only to the areas outside the wilderness. So, currently, 24% containment means 24% of the fire perimeter that is outside wilderness.

Containment is only applied to the 28% that is under the full suppression strategy.

All this to say, the black line you see on the map will never go all the way around the fire. But, rest assured, firefighters will keep a close watch on this fire with the primary goal to keep you and your properties safe.

We won’t walk away until it’s over.

(Photo credit: USFS . Disclaimer- Photo shows a typical containment line in this type of terrain- but it was not taken on this fire)

## Health

Deaths rates increase after a hurricane - study

[https://news.stanford.edu/stories/2024/10/study-links-hurricanes-to-higher-death-rates-long-after-storms-pass?fbclid=IwZXh0bgNhZW0CMTAAAR2qgjnHGsXc3Pd8w7qE1\\_LOPuBMONgb\\_X-9XEdAyuJo71YYM5B8-So1ZU\\_aem\\_BJ38Jy2A0qXA7OsFiWmu1g](https://news.stanford.edu/stories/2024/10/study-links-hurricanes-to-higher-death-rates-long-after-storms-pass?fbclid=IwZXh0bgNhZW0CMTAAAR2qgjnHGsXc3Pd8w7qE1_LOPuBMONgb_X-9XEdAyuJo71YYM5B8-So1ZU_aem_BJ38Jy2A0qXA7OsFiWmu1g)

## Pandemics

## Economics

General issue

126,000 homes destroyed in WNC, over 12,000 in LA fires.

Jan 13, 2025, 12,000 still without homes

WNC slated to cost over \$250B

LA over \$200B as of Jan 13 25

[https://www.citizen-times.com/story/news/local/2025/01/13/wnc-residents-displaced-by-helene-turn-to-campers-as-housing/77574924007/?utm\\_source=pash-DailyBriefing&utm\\_medium=email&utm\\_campaign=daily-briefing&utm\\_term=Content%20List%20-%20Stacking%20-%20optimized&utm\\_content=1122CT-E-NLETTER65](https://www.citizen-times.com/story/news/local/2025/01/13/wnc-residents-displaced-by-helene-turn-to-campers-as-housing/77574924007/?utm_source=pash-DailyBriefing&utm_medium=email&utm_campaign=daily-briefing&utm_term=Content%20List%20-%20Stacking%20-%20optimized&utm_content=1122CT-E-NLETTER65)

<https://www.economist.com/briefing/2024/04/11/homeowners-face-a-25trn-bill-from-climate-change>

<https://www.youtube.com/watch?v=mlJngqmFFyE>

Insurance risks - in depth layout

[https://www.dropbox.com/scl/fi/4qpbw54ghiigwba8utdnl/volts24.12.04-kate.gordon.pdf?rlkey=sojm0p1hwzeae9dnp06gpo0lb&e=1&st=8fu8l9nw&utm\\_medium=email&utm\\_source=subscribe&dl=0](https://www.dropbox.com/scl/fi/4qpbw54ghiigwba8utdnl/volts24.12.04-kate.gordon.pdf?rlkey=sojm0p1hwzeae9dnp06gpo0lb&e=1&st=8fu8l9nw&utm_medium=email&utm_source=subscribe&dl=0)

Insurers dropping people = free article link

[https://www.nytimes.com/interactive/2024/12/18/climate/insurance-non-renewal-climate-crises.html?unlocked\\_article\\_code=1.I04.B4mc.kfhXcVSZGqt\\_&smid=url-share](https://www.nytimes.com/interactive/2024/12/18/climate/insurance-non-renewal-climate-crises.html?unlocked_article_code=1.I04.B4mc.kfhXcVSZGqt_&smid=url-share)

Insurance models not working

<https://grist.org/economics/new-data-shows-just-how-bad-the-climate-insurance-crisis-has-become/>

Farms destroyed, food access, jobs

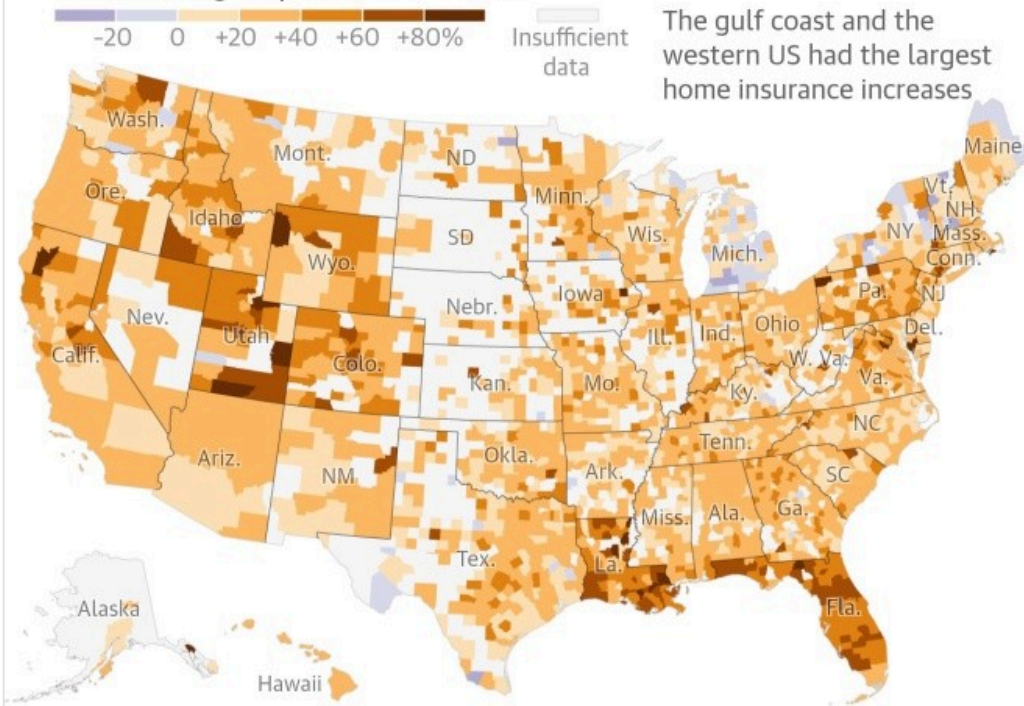
<https://carolinapublicpress.org/67551/food-access-western-nc-aftermath-helene-crisis-hunger/>

Billionaires/corporations land grabbing

[https://houseofgreen.substack.com/p/one-of-the-biggest-wealth-transfers?r=1knv2g&utm\\_medium=ios&triedRedirect=true](https://houseofgreen.substack.com/p/one-of-the-biggest-wealth-transfers?r=1knv2g&utm_medium=ios&triedRedirect=true)

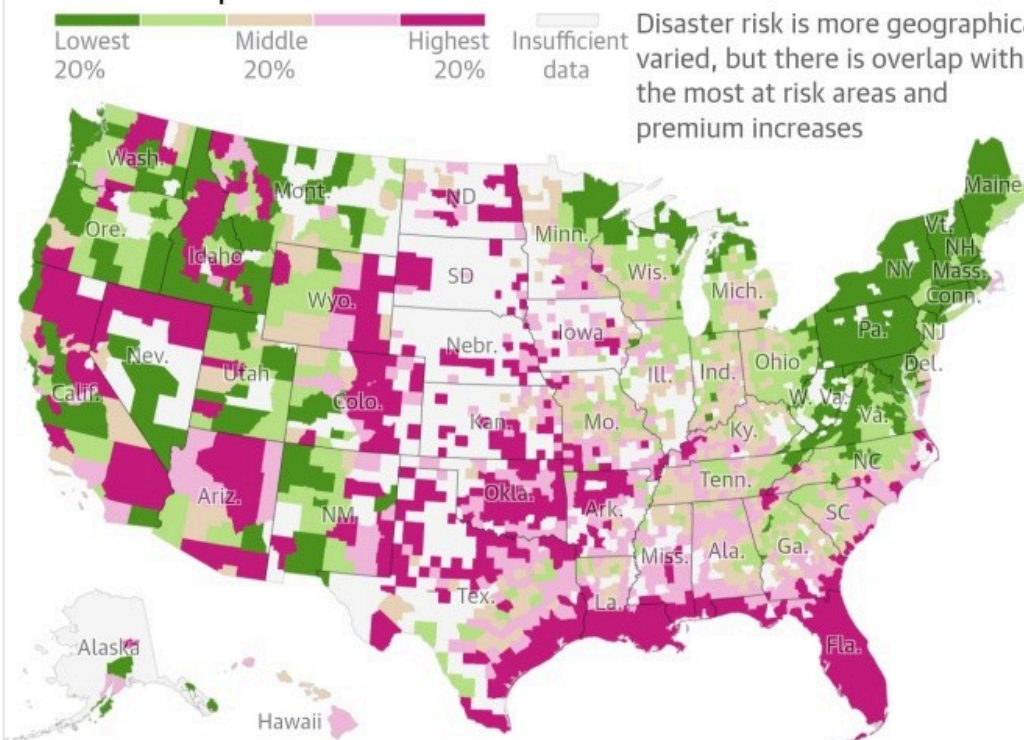


### Percent change in premiums, 2020-23



The gulf coast and the western US had the largest home insurance increases

### Disaster risk quintiles



Disaster risk is more geographically varied, but there is overlap with the most at risk areas and premium increases

Guardian graphic. Source: Keys, et al., 2024, "Property Insurance and Disaster Risk: New Evidence from Mortgage Escrow Data". Note: Counties with fewer than 20 mortgages observed were excluded.

[https://www.nytimes.com/interactive/2025/01/16/climate/home-insurance-cancellations.html?unlocked\\_article\\_code=1.p04.oGHX.gKpFyQkoAXBw&smid=url-share](https://www.nytimes.com/interactive/2025/01/16/climate/home-insurance-cancellations.html?unlocked_article_code=1.p04.oGHX.gKpFyQkoAXBw&smid=url-share) Free article dives into risks of home insurance losses.

Community wide economic injury (tourist season was cut across severely)

## Access

Roads

Bridges

Train tracks

## Waste disposal

As of Dec 19, 24, WLOS ABC 13 reported today that 500,000 cubic yards of debris have been removed in Buncombe County/Asheville NC in 11 weeks since [#HurricaneHelene](#).

That's an estimated FIVE PERCENT of the total debris left by the storm. At this pace. It will take SIX AND A HALF YEARS to finish the debris removal. Can some of the organic material be used to build soil? Has it been contaminated?

## Earthquakes

USGS earthquake tracker

<https://earthquake.usgs.gov/earthquakes/map/?extent=-14.94478,-156.97266&extent=52.9089,-32.95898>



# Waste & Pollution



# Notes

Notes

Wind



# Notes-Wind





# Erosion & Landslide

# Erosion

(see also Fire)

## Landslides/geology\*

[\*note from Zan: I am also using these headings as keywords and/or subject headers.]

Geologist Phil Prince at Geomodels explores debris flows and other damage

<https://www.youtube.com/@TheGeoModels>

Keywords: Landslides, Appalachian geology, WNC geology, debris flows, erosion, flood, climate change, hurricane damage, assessment (let me know how these keywords work for you guys, might be better ones)

1916 and 2024 landslides compared

<https://www.facebook.com/groups/5322547411191905/permalink/8827687647344513/?mibextid=wwXlfr&rdid=eWKeJDQEy5NVNiSz> (this is news so not sure how long it will stay up)

Keywords: Landslides, Appalachian geology, WNC geology, debris flows, erosion, flood, climate change, hurricane damage, assessment

*[Zan here] one of the comments had a link to the data she is showing the reporter, which I'll also add to this item (the link): <https://arcg.is/184Gz82> (Landslide Hazards in North Carolina) I'll put the data as the primary item and also the reel from CBS (which we can remove if it goes stale)*

Landslides documented

<https://www.arcgis.com/apps/dashboards/01b4f51fc0b64002bf7722a9acfc181d>

Keywords: Landslides, Appalachian geology, WNC geology, debris flows, erosion, flood events, assessment

<https://wpln.org/post/landslides-crushed-roads-and-structures-after-helene-geologists-have-mapped-more-than-500/>

<https://www.facebook.com/reel/484140087429033>

Geomodels of the hurricane

<https://www.youtube.com/watch?v=sDRx0J8yRMM&t=468s>

Keywords: Landslides, Appalachian geology, WNC geology, debris flows, erosion, flood events, hurricane damage, assessment

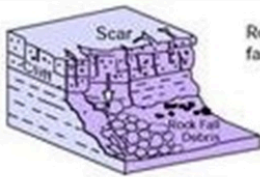
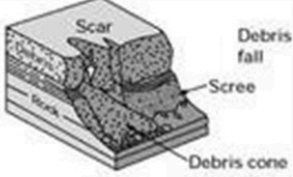
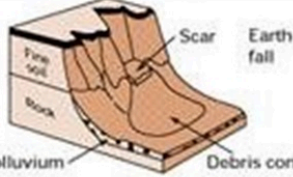
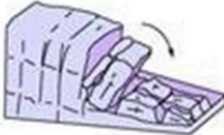
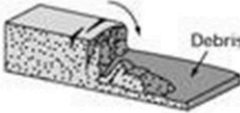
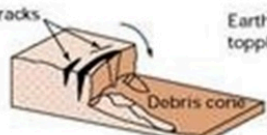
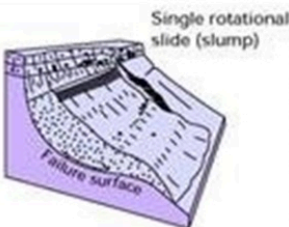
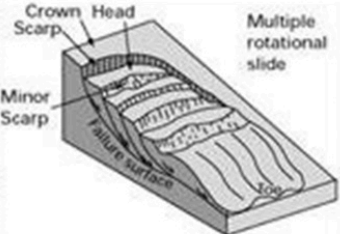
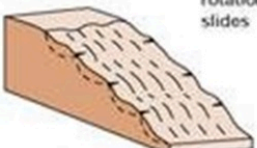
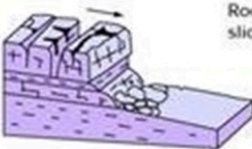
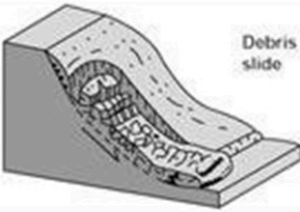
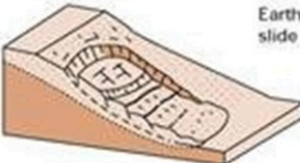
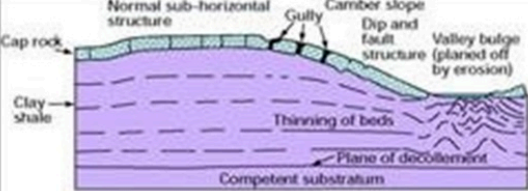

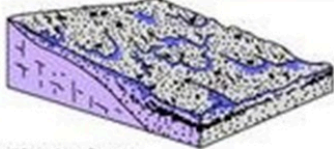
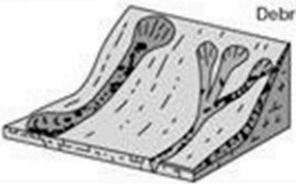


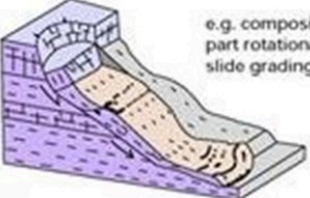
Land failure in NC - video (Geomodels)

<https://www.youtube.com/watch?v=oBuJxHR4ycY&t=408s>

Land flows:

<https://www.facebook.com/photo.php?fbid=526856456926834&set=p.526856456926834&type=3> (the below image could be directly inputted)

Landslides, land flows, geology (is there a more precise term?)

Material				
Movement type		ROCK	DEBRIS	EARTH
FALLS		 Rock fall	 Debris fall Scree Debris cone	 Earth fall Colluvium Debris cone
		 Rock topple	 Debris topple Debris cone	 Earth topple Debris cone
SLIDES	Rotational	 Single rotational slide (slump) Failure surface	 Multiple rotational slide Crown Scarp Head Minor Scarp Failure surface	 Successive rotational slides
	Translational (Planar)	 Rock slide	 Debris slide	 Earth slide
SPREADS		 e.g. cambering and valley bulging		 Earth spread
FLOWS		 Solifluction flows (Periglacial debris flows)	 Debris flow	 Earth flow (mud flow)
	COMPLEX	 e.g. Slump-earthflow with rockfall debris	 e.g. composite, non-circular part rotational/part translational slide grading to earthflow at toe	

Health



Economic





# Infrastructure

Limited evacuation routes mapped

<https://www.streetlightdata.com/limited-emergency-evacuation-routes-map/>

# Water & Flood



# Earthquake



# Responses

## Change management orgs

[https://armillaria.io/?fbclid=IwZXh0bgNhZW0CMTAAAR0auCWmfcmx2WT\\_27u2bxwmtBoik\\_eRNXDaj1dOJjkshDNXmp\\_9wOvLAU\\_aem\\_RUTidUpmgvlek8qiX7nq\\_Q](https://armillaria.io/?fbclid=IwZXh0bgNhZW0CMTAAAR0auCWmfcmx2WT_27u2bxwmtBoik_eRNXDaj1dOJjkshDNXmp_9wOvLAU_aem_RUTidUpmgvlek8qiX7nq_Q)

## General preparation

### Disaster Readiness Guides

Preparation, response, recovery, heat, wildfires, wildfire smoke, power outage, water, floods, earthquakes, severe storms, how-to, California

Basic info in “quick guide” form, suitable for posters, for a range of natural disasters and emergencies, that apply to any area. Website includes an alert system for current emergencies for California, and resource hub for recovery, Federal and California state.

<https://www.listocalifornia.org/disaster-readiness/>

## Prep kits

Preparing for a hurricane

Prepping for a winter storm

Emergency prep kit, Los Angeles (most info is applicable anywhere)

## Climate change

Drawdown Explorer (in progress)

Great overview of where the leverage points for change are for overall climate change

Drawdown Explorer will focus on bioregional solutions specifically for local leaders/individuals

Focus on food system, moving toward regenerative growing; food system is sliding backwards

Holistic approach - climate, nature (biodiversity) and people

Global Solutions Diary, we can load our own story/project into this map

<https://www.youtube.com/watch?v=mEQLWHsIVRo>

## Ecological repair

What are top climate friendly solutions? Most carbon capture? Most biodiversity and resilience?



Beavers

<https://www.youtube.com/watch?v=FPwBcyaXih8>

## Land use planning

Very little of it addresses potential disasters enhanced by climate change. How can we remedy?

## Revitalizing damaged ecosystems

**Assisted migration:** Planting trees from a slightly southern ecosystem? Planting wind resistant species on ridges?

What native species are vast growing, riparian, will hold banks and build soil, but will fade back and bend to the succession process?

Miyawaki forest planting

<https://www.youtube.com/watch?v=Z1-bNpA9FQE>

Local communities buying up damaged land - opportunity for ecological healing?

It Appears that FEMA is giving funds to LOCAL NC GOVERNMENT to purchase unusable land at its latest Tax assessed price ! .....The property buyout aspect of the program enables local governments to use FEMA funds to buy properties —whether residential, commercial or vacant land — in the wake of a disaster such as Tropical Storm Helene. The purchase price can be equal to the property's appraised value the day before the disaster. 3 days ago

## Wind damage

Wind and Trees: Lessons Learned from Hurricanes

How to mitigate tree damage in hurricane force winds based on study of damage from multiple hurricanes.

Mitigation, prevention, recovery, wind damage, tree damage, forest management, suburban, how-to, wind-resilient tree list

<https://hort.ifas.ufl.edu/woody/documents/FR173.pdf>

## Stream bed repair/erosion control

## See also Water (below)

### Experts:

Bill Zydeck

Craig Spoenholz

Brad Lancaster

Zack Weiss?

Restoration examples/case studies

<https://symbioticfund.wordpress.com/>

<https://environment.govt.nz/assets/Publications/Files/appendix-2-restorationcasestudies.pdf>

Sediment control is tricky, almost anything can wash out in a big storm.

Post fire recovery, evidence based

<https://www.youtube.com/playlist?list=PLBUEGZK5qzuUF3zVjgWIAjUjW00ULxN6K>

Erosion control, fire recovery

Erosion control: <https://www.youtube.com/watch?v=DFQPusZH-as>

Key: Erosion control, fire recovery

Rich Casale, working with nature [richcasale3@gmail.com](mailto:richcasale3@gmail.com)

Certified Erosion Control Specialist CPESC.org Envirocert Resource Conservation District, erosion control tech. Developed a manual for NRCS, post fire restoration on how to create fire resistance. He's done most of the work in NRCS on this topic.

Valerie Carrillo-Zara, planning and design is key

## Stream bank renewal

<https://www.youtube.com/watch?v=nISgzvnVai0>

Erosion control, stream restoration

Living web farms The Foster Creek Restoration Project is a multi-year and multi-phase effort of the Mills River Partnership spearheaded by Executive Director Maria Wise in conjunction with Living Web Farms and a team of biologists, local farmers, and other supporters of the Mills River watershed. This large-scale endeavor is to re-establish the original meandering flow that Foster Creek had before it was forced into a straightened path to increase farmland and follow the roadway. Water does not flow in a straight line but naturally makes its way across the land in spirals and curves. Straight streams cause numerous problems such as soil erosion, flooding, stream ecosystem disruption, siltation, loss of habitat, and harm to the local watershed among other things. Restored streams have an initial period of disruption to reconstruct the curvature emulating the original path of nature as much as possible. They soon grow into beautifully restored stream ecosystems with a variety of perennial plants deeply rooting into the banks that support biodiversity such as insects,

invertebrates, birds, and small mammals as you will see in this exemplary project. From start to finish, see our preparations, plant selections and cultivation, aerial footage, biologists' scientific observations, insights from engineers, and much more. Learn about the Mills River Partnership at [www.millsriverwater.org](http://www.millsriverwater.org).

Miyawaki method of planting trees (dense, deep rooted, various sizes/diverse) is used to prevent tsunami damage. Also, organic waste is gathered in Japan to assist the tree planting - could be used to rebuild soil. <https://community.pcx.earth/posts/75138268>

Miyawaki forest planting

<https://www.youtube.com/watch?v=Z1-bNpA9FQE>

Protecting riparian zones legally:

<https://legal-planet.org/2015/07/08/could-a-riparian-conservation-network-increase-the-ecological-resilience-of-public-lands/>

Beavers used to repair streams

[https://www.facebook.com/watch/?extid=CL-UNK-UNK-UNK-IO5\\_GK0T-GK1C&v=1103177587858707](https://www.facebook.com/watch/?extid=CL-UNK-UNK-UNK-IO5_GK0T-GK1C&v=1103177587858707)

<https://local.microsoft.com/blog/restoring-wenatchee-and-entiat-river-ecosystems-by-reintroducing-beavers/>

<https://businessforwater.org/projects/wenatchee-entiat-river-habitat-restoration>

## Forestry (dead trees/brush, fire ecology, soil rehab, biodiversity, etc)

Figuring out a way to tab this.... The best solutions will address all of these points. Biochar is an obvious starting point.

Strategies for dead wood:

## Fire solutions

Fire warning systems

<https://protect.genesys.com>

Calfire-forestry.maps.arcgis.com

fire.ca.gov

Fire preparation and recovery strategies, Australia

Fire resistant landscape, fire resistant building, how-to

[https://www.regrarians.org/ron/ron-climate/beforethefire-resources/?fbclid=IwY2xjawH7Bi9leHRuA2FlbQlXMQABHV9axoivo8gNrZE6LLp1ZgzeNWZjYLRqBAcdD9ht8S1hCKnRyK3NYi4hrQ\\_aem\\_kqd4UcUH4BxnglX0OlqkXQ](https://www.regrarians.org/ron/ron-climate/beforethefire-resources/?fbclid=IwY2xjawH7Bi9leHRuA2FlbQlXMQABHV9axoivo8gNrZE6LLp1ZgzeNWZjYLRqBAcdD9ht8S1hCKnRyK3NYi4hrQ_aem_kqd4UcUH4BxnglX0OlqkXQ)

Planning and Preparation for fires, Calif Fire Safe Council

Detailed plans for individuals, communities and forestry management to prevent and mitigate damage from wildfires.

Mitigation, preparation, prevention, community fire plan, wildfire, adaptation, risk reduction, climate change, how-to

<https://cafiresafecouncil.org/all-resources/planning-preparation/>

Fire risk reduction (overall)

<https://storymaps.arcgis.com/stories/792662ebdf964d6f8e8a20ecd8ee6093>

<https://www.nature.org/en-us/about-us/where-we-work/united-states/north-carolina/stories-in-north-carolina/reducing-wildfire-risk-gap-project/>

Fire preparedness/recovery

<https://ucanr.edu/sites/fire/>

Kelpie Wilson - biochar fire ecology

<https://www.youtube.com/watch?v=sYTCvVp5bZ8>

<https://wilsonbiochar.com/>

Biochar - fire ecology series

<https://www.youtube.com/watch?v=hZ7LVMDa4EU>

Preventing fires through design, human settlements - Andrew Millison

[https://www.youtube.com/watch?v=y\\_HEHIE-dE](https://www.youtube.com/watch?v=y_HEHIE-dE)

Eric Ohlsen, Fire Ecology <https://www.youtube.com/watch?v=NcDSBa8Pcmc>

Brock Dolman, Fire Safe Sonoma <https://www.youtube.com/watch?v=zkdWBLGTxnl>

PINA fire ecology/biochar series

<https://www.youtube.com/watch?v=S5GdzQ00HdY>

[https://www.youtube.com/watch?v=wP\\_7kGO9GP4](https://www.youtube.com/watch?v=wP_7kGO9GP4)

<https://www.youtube.com/watch?v=NcDSBa8Pcmc&t=333s>

FEMA burn, interesting <https://www.youtube.com/watch?v=AMzNmmQuQ0k>

Air curtain burners (FEMA is using) <https://airburners.com/technology/principle/>

Rehydrating California to prevent wildfires (techniques apply to many ecosystems)

Rewilding, wetlands, keyline, urban heat dome, aquifers, irrigation, wildfire mitigation, water conservation

[https://climatewaterproject.substack.com/p/rehydrating-california-to-prevent?r=c964p&utm\\_campaign=post&utm\\_medium=web&fbclid=IwY2xjawH7DfdleHRuA2FlbQIxMQABHVTW8TUlrWBr5bQ\\_QpkqrmFaQPpPppzK2hqnmddxQGDIZVH7t\\_F9Xn7DA\\_aem\\_2JJkIJVqVzzi5cnJjgz0SA&triedRedirect=true](https://climatewaterproject.substack.com/p/rehydrating-california-to-prevent?r=c964p&utm_campaign=post&utm_medium=web&fbclid=IwY2xjawH7DfdleHRuA2FlbQIxMQABHVTW8TUlrWBr5bQ_QpkqrmFaQPpPppzK2hqnmddxQGDIZVH7t_F9Xn7DA_aem_2JJkIJVqVzzi5cnJjgz0SA&triedRedirect=true)

<https://climatewaterproject.substack.com/p/the-water-solution-a-plan-for-lessening>

Calif Wildfire task force

<https://wildfiretaskforce.org/>

Mediterranean cypress is very fire resistant, but also potentially invasive

<https://www.washingtonpost.com/news/morning-mix/wp/2015/09/03/how-a-devastating-forest-fire-revealed-a-tree-as-close-to-fireproof-as-a-tree-can-get/>

Less Severe Forest Fires can reduce intensity of future blazes

<https://www.ucdavis.edu/climate/news/less-severe-forest-fires-can-reduce-intensity-future-blazes>

<https://www.youtube.com/watch?v=DFQPusZH-as>

<https://oaec.org/watch-brooks-firesafe-sonoma-talk-fuels-to-flows/>

Fire ecology webinar - Defensible Space outside the 100' zone

Fire ecology, fuel reduction, mitigation, prevention, broadscale fire resistance, regenerative land management, California

<https://www.youtube.com/watch?v=21JhYo1caBE>

<https://open.spotify.com/episode/3RZfswye9NtwMIX8OgUrCm>

Debris management (following too)

<https://hazards.colorado.edu/quick-response-report/disaster-debris-management-and-the-maine-floods-of-2023>

Chip wood and leaving at least some of it on site to control erosion/build soil

Alternative use - Use wood chips as compost heat recovery/soil building (see Jean Pain videos)

What if wood chippers chipped wood by road side and sent it right into the forest? Dropping wood chips to hold down erosion won't work everywhere. What effects will be created on succession process, especially of pioneer wildflowers/annuals? Some will do much better with wood chips, some worse.

Seeding selectively (on contour, like prairie strips?)

Leave logs on site, on contour to catch soil, slow erosion

Create deeply embedded fences with wood (Japanese style) to hold erosion

Use wood for firewood and rebuilding homes

Firewood can be gathered for free in Pisgah, with a permit in Nantahala.

[https://www.fs.usda.gov/detail/nfsnc/news-events/?cid=FSEPRD1216130&fbclid=IwY2xjawH-R\\_BleHRuA2FibQIxMAABHfv7\\_BLXMj77aJp9U0odXymSHueyJtPardPE9L-DFo0ntFW0MGVfp2GbA\\_aem\\_iTGtnalwxdJcPmljWq-kow](https://www.fs.usda.gov/detail/nfsnc/news-events/?cid=FSEPRD1216130&fbclid=IwY2xjawH-R_BleHRuA2FibQIxMAABHfv7_BLXMj77aJp9U0odXymSHueyJtPardPE9L-DFo0ntFW0MGVfp2GbA_aem_iTGtnalwxdJcPmljWq-kow)

More misc Biochar related

(this goes under forestry too)

Large scale biochar facility - captures heat - how expensive? Compare to Kelpie's?

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/farm-scale-biochar/>  
<https://livingwebfarms.org/multimedia/videos/farm-tours/florida-biochar-facility/>

Does this produce biochar? Could it?

[https://airburners.com/products/roll-off-firebox/?gad\\_source=1](https://airburners.com/products/roll-off-firebox/?gad_source=1)

Dan Hettinger

Are you near Asheville or Boone? There is a community here building a network of loaner flame cap kilns and we would be happy to help support you with this

<https://www.youtube.com/watch?v=ixtxNfU9Rb8>

Is there any possible lumber there?

I would get everything diced up and piled.

My seedlings have been growing twice as fast, much greener and stronger stems for the last 3 years.

This is in a soil environment which already got ample worm juice and compost tea.

I have not seen any benefits to adding it in autumn ( inoculated biochar with plantaam)

I don't do much to soils in winter other than mulch and some greens turned in.

I have made char in a few different ways. But here I needed to clean up much debris without very easy access. Simply screwed together scrap roof sheets. Build a fire and gradually add materials as the bottom starves for oxygen. The burn concentrates on upper material. Makes a lot of material. Will save some larger material for the grill and crush the rest. Usually nothing larger than 4 or 5" in Max diameter. Maybe 3' lengths depending.



What about galvanization chemicals though?

<https://www.facebook.com/costaricaaquaponics.aquaponics/> (Steve Temp)

Digging trenches, burning in trenches or pits

REforestation

<https://www.thisiscolossal.com/2020/10/daisugi-trees-japan/> (? Is this viable or valuable in some circumstances? Which ones, if so?)



# Pollution/sanitation

## Soil/gardens

Handling exposure to toxins in the garden (from flooding)

Gives FDA guidance and more

<https://ncfreshproducesafety.ces.ncsu.edu/2024/09/assessing-damage-in-produce-crops-during-times-of-excessive-rainfall/>

<https://www.organicgrowersschool.org/blog/post-hurricane-garden-care>

<https://foodsafety.ces.ncsu.edu/wp-content/uploads/2011/08/recovering-from-a-storm-flooding.pdf?fwd=no>

Keywords: Soil contamination, food safety, floodwater contamination

## Food

<https://foodsafetyrepository.ces.ncsu.edu/2024/10/food-safety-considerations-after-a-flood/>

Keywords: Food safety, food contamination, floodwater contamination

## Water pollution (of all kinds)

Well contamination from ruined septs, other sewage, and/or chemicals

Water testing needed

Septic tanks - some have been filled with muck and companies say they can't suck it out, too thick. Advising tank removal and replacement? Lid is damaged. Another guy is offering to shovel it out with a little backhoe, then re-pour the lid, for cheaper than replacement. Leach field needs replacing too. How many septic tanks have been compromised/washed out?

<https://foodsafetyrepository.ces.ncsu.edu/2024/10/drinking-water-safety/>

Drinking water safety, well water contamination, floodwater contamination

## Wells

Getting a well water sample

<https://www.youtube.com/watch?v=auyj9ljU6Gw>

Disinfection

<https://www.ncdhhs.gov/well-disinfection-simple/download?attachment>

Free well disinfection

<https://www.ncdhhs.gov/news/press-releases/2024/10/22/ncdhhs-provides-free-well-disinfection-well-water-collection-kits-communities-impacted-hurricane>

Cleaning up salt water in tsunami, maybe some useful tech

[https://en.wikipedia.org/wiki/International\\_Water\\_Management\\_Institute](https://en.wikipedia.org/wiki/International_Water_Management_Institute)

Rainwater catchment

After fire

<https://www.facebook.com/photo/?fbid=1114635973833035&set=a.487314269898545>

Mold

Handling mold - Starhawk, using EM tech.

Air pollution

Waste disposal

Landfills as an asset

[https://r3genesis.substack.com/p/135-landfills-as-living-resource?r=134yl&utm\\_medium=email](https://r3genesis.substack.com/p/135-landfills-as-living-resource?r=134yl&utm_medium=email)

## Shelter

Andrew Cobb? Rebuilding to prevent mold from repeated flooding.

Free course on decarbonizing construction

<https://heterogeneous-engineering.org/open-access-textbook/>

Codes, structural needs

<https://www.wbtv.com/2024/10/05/north-carolina-lawmakers-erode-building-code-years-before-helene-hit/>

Geoships, resistant to fire, earthquakes, floods

<https://www.geoship.is/>

Fire resistant (see also fire)

Suburban Wildfire Adaptation Roadmaps

Detailed building and retrofit instructions for fire hardening homes and small businesses

Fire resistant shelter, how to

[https://ibhs.org/wp-content/uploads/member\\_docs/ibhs-suburban-wildfire-adaptation-roadmaps.pdf](https://ibhs.org/wp-content/uploads/member_docs/ibhs-suburban-wildfire-adaptation-roadmaps.pdf)

How to prepare your home for fire and other strategies for wildfire

Fire-resistant building, How-to, preparation

<https://www.eldoradocounty.ca.gov/Public-Safety-Justice/Wildfire-Disaster/Office-of-Wildfire-Preparedness-and-Resilience/Home-Hardening>

Home assessment app, and other resources for fire resistance

Assessment, preparation, fire-resistant building, how-to, Canada, fire-resistant landscape, builders, education, community

<https://firesmartcanada.ca/>

Fire resistant fungi used as building material

Fungi-based building material, fire resistant building, energy efficiency, prevention, mitigation, preparation, research

<https://hazards.colorado.edu/mitigation-matters-report/fire-resistant-and-energy-efficient-fungi-based-building-materials>

Successful actions for fire hardening your home

Video regarding two homes that survived the LA fires, and the techniques they used to do so

<https://www.youtube.com/watch?v=yZe-TlYxm9g>

<https://www.youtube.com/watch?v=XLsyr77OZEQ>

I am a welder and I built a perimeter fence for a client just before the Woolsey fire ....I made it out of perforated steel for privacy and also fire resistance.....the fire department came and inspected after the fire and told the homeowner that the fence saved their home .....when the client evaluated he confided in me he looked back a last time thinking his home was going to burn down because the neighbor had massive pine trees and needles as fuel .....on foot deep in pine needles fueled that fire .....that fence held the fire at bay ....fence created an effective fire break and served as a radiator to decapitate the extreme heat on the fence

[https://www.monolithic.org/?fbclid=IwZXh0bgNhZW0CMTAAR17S2r6EG301fp1W0\\_ue3ogiRg3xQPXaEZQ0eyF468bxbJ9qz5vrRK3PGg\\_aem\\_g4gQmHX5xonJa7WZ43mXKQ](https://www.monolithic.org/?fbclid=IwZXh0bgNhZW0CMTAAR17S2r6EG301fp1W0_ue3ogiRg3xQPXaEZQ0eyF468bxbJ9qz5vrRK3PGg_aem_g4gQmHX5xonJa7WZ43mXKQ)

<https://hazards.colorado.edu/mitigation-matters-report/fire-resistant-and-energy-efficient-fungi-based-building-materials>

Wood from fallen trees suitable for building. Some will be “wind damaged” and not structurally strong. Would cordwood work? Some people have backyard wood mills. What about buying one per community for those who don’t have access? Can we get funding for people to utilize suitable wood for rebuilding?

White oak (*Quercus alba*)

Northern red oak (*Quercus rubra*)

Chestnut oak (*Quercus montana*)

Eastern white pine (*Pinus strobus*)

Virginia pine (*Pinus virginiana*)

Loblolly pine (*Pinus taeda*)

American basswood (*Tilia Americana*)

Mockernut hickory (*Carya alba*)

White ash (*Fraxinus americana*)

American beech (*Fagus grandifolia*)

Hemp lego brick house - fire, earthquake, flood resistant

<https://www.facebook.com/reel/1601729330706430>

<https://justbiofiber.com/>

Hempcrete (not vetted)

1. Hemplime is a humidity regulating material, absorbs and releases moisture. Something that cheap cement blocks cant do.
2. Hemplime is mold resistant, since lime is an extremely alkaline material.
3. Hemplime protects structural (timber) frame from termites.
4. Hemplime has a great sound insulation, so you dont hear when your neighbour door sneezes or snores.

5. Thickness of insulation can be decided and adjusted depending on the climate conditions.
6. Fire-resistant , meaning the material will not easily burn and create toxic fumes during wild fires.
7. Material can be placed in the roof, walls, floor with no protection. Goodbye rockwool and membranes.
8. Hemplime is pest resistant. No rodents or mice will ever get into any parts of the insulation.
9. It excludes the use of cement inside wall partitions.
10. It can be prepared using local bio-mass and lime.
11. Hemplime can be used in combination with bamboo, stops massive tree cutting around the region.
12. Highly scalable technology that mostly requires low-skill labour. You can build hemp homes with your friends once you learn.
13. Architects can be very creative with a curvy walls using this material.
14. High insulation properties of Hemplime allow the owner to save on energy bills and not keep AC running 24/7.
15. IT IS 100% NATURAL - MEANING YOU WILL LIVE IN A VERY COZY CONDITIONS!  
This point is the most important out all of them and is always overlooked.

Fire resistant, flood resistant hemp (also kenafcrete)

<https://www.youtube.com/shorts/YJaMZLRwS4U>

Spraying kenafcrete or hempcrete on sides of buildings with stucco sprayer. Sealant has colors.

Concrete blocks made like legos, very stable, can be built by anybody.

## Other builds

Fast, easy, cheap (use sticky straw to insulate)

<https://www.facebook.com/reel/532240536295234>

Geoships

<https://www.youtube.com/watch?v=ELihrjm7ffk>

Straw panels

<https://www.abc.net.au/news/2024-10-17/straw-compressed-panels-bushfire-resistant/10437796>

[2?utm\\_medium=social&utm\\_content=sf275129338&utm\\_campaign=abc\\_rural&utm\\_source=m.facebook.com&sf275129338=1](https://www.facebook.com/sf275129338/?utm_medium=social&utm_content=sf275129338&utm_campaign=abc_rural&utm_source=m.facebook.com&sf275129338=1)

Army tents - can be insulated, have ports for a wood stove, big enough for family. Can have separate rooms. Can last years, if maintained.

Hot tents with stoves are being used to house the unhoused in WNC (very similar to army tents, though they look less expensive, and nylon rather than canvas).

[https://www.amazon.com/OneTigris-6-Person-Teepee-Tent/dp/B09B249MHJ?crd=15ND1EPZC3ZSW&dib=eyJ2ljojMSJ9.WQqSdYnRI4DvdTfYQmC95ywENvMW5BnV-b-0aKYloAktyHNactqTFKUEK2sTRhuxPV\\_0PZtiwxAdoJDxa9gqaOTfloodKRcwNd13Nwtzi6f22w1OdrU\\_bfKMHGqkytWQiBZHF6GS8xzd7O0LT9o16WyqXvIJJDZGmdyzc5lp2hdIYgSoF5anTpqF5EvJC3\\_MMXLlpVbqOqS-DOe0-R8z592h4PgToANKhZXd8KxqsWU.adjnptmWPLfgBxSICN5Zdug8vFTD26O2REULbVr61lo&dib\\_tag=se&keywords=hot%2Btents%2Bfor%2Bcamping%2Bwith%2Bstove&qid=1734669594&srefix=hot%2Bten%2Caps%2C173&sr=8-4&th=1](https://www.amazon.com/OneTigris-6-Person-Teepee-Tent/dp/B09B249MHJ?crd=15ND1EPZC3ZSW&dib=eyJ2ljojMSJ9.WQqSdYnRI4DvdTfYQmC95ywENvMW5BnV-b-0aKYloAktyHNactqTFKUEK2sTRhuxPV_0PZtiwxAdoJDxa9gqaOTfloodKRcwNd13Nwtzi6f22w1OdrU_bfKMHGqkytWQiBZHF6GS8xzd7O0LT9o16WyqXvIJJDZGmdyzc5lp2hdIYgSoF5anTpqF5EvJC3_MMXLlpVbqOqS-DOe0-R8z592h4PgToANKhZXd8KxqsWU.adjnptmWPLfgBxSICN5Zdug8vFTD26O2REULbVr61lo&dib_tag=se&keywords=hot%2Btents%2Bfor%2Bcamping%2Bwith%2Bstove&qid=1734669594&srefix=hot%2Bten%2Caps%2C173&sr=8-4&th=1)

The Final Walkthrough: BeLoved Asheville Village

inspecting the final touches before these 12 beautiful homes are ready to welcome their new families.

Each corner of this village tells a story of love, resilience, and community. These homes were not just built—they were crafted by the hands and hearts of neighbors, volunteers, and dreamers. Built by the community, for the community, this project reminds us that nothing is impossible when we come together.

A special thanks to Leanna Echeverri of @LechePhotography for capturing these incredible moments. Your lens has preserved the spirit of this milestone, showing the beauty of what we've built and the hope it holds for the future.



Together, we rise. Together, we build. Together, we thrive



Beloved has 9 more acres purchased. <https://www.facebook.com/reel/573439895453211>

Christians for Cabins is another that is building tiny homes for people.

Using bamboo poles to anchor foundation in Vietnam, interesting.

<https://www.facebook.com/reel/951138129818518>

Reciprocal frame shelters (can be built with scrap lumber, sticks, etc)

<https://parametrichouse.com/reciprocal/>

Solutions for unhoused:

Dignity Village Portland

Dome Village Los Angeles

What else?

## Appropriate tech

[Bridge repaired with two rail cars](#)

<https://www.facebook.com/reel/1272946963714385>

We need a way to detox the mud! And the water.

<https://www.facebook.com/reel/1089844296077417>

Notes:

## Anthony Francis Troia

Here is what I want people (someone/anyone) to do: First, form a team of systems thinkers, regenerative agriculturalists, engineers, "people persons" (to approach institutions) and maybe some psychedelic futurist visionaries (although, they usually just get in the way). Said team would steward relationships between designers/farmers/artists/engineers and affordable housing entities.

WHAT THE TEAM IS NOT DOING: forming affordable housing nonprofits since those already exist. The team is more of an agent for design/ideas and a force to actualize those ideas. We are inundated with world-class talent in WNC; let's put it to use. Artists should be artists and nonprofits should be nonprofits, get it!? The team will model (as in physical models) affordable regenerative developments and brainstorm the nuts and bolts of how to actualize these visions.

"What are some fledging visions to get this thing off the ground, Tony?" I'm glad you asked. What I\* want to see happen: Create a profitable container (a market) for farmers to produce timber and hemp in no-till agroforestry systems. Use said materials to build passive solar hempcrete buildings (row houses?). Employ low/no-skilled people to do nontoxic manual labor (mix hempcrete, spread earth plaster etc.) at a living wage. Create a business model that ensures said workers can afford one of the structures they are working on...not that they necessarily will buy one..it's more of a metric. The team I'm speaking of would design these buildings to be maximally beautiful, functional, and affordable. So...how do we get this team up and running, because I think it's go-time!? I was gonna wait until my 50's to launch this project, but people need homes NOW!

## Phillip Kendall

Count me in!! I think about regenerative systems for our communities all day long, and at a scale to really create local resiliency. Love the focus on timber and hemp as building materials for local community housing. Having well managed fields & forests is key. Another idea: create thatched roofing from all the muscathus around Mars Hill, and cultivate a specialty trade/ craft/ skill built on making the best use of an invasive species. Problem = solution



# Energy

## Solar

Offgrid solar:

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/remote-solar-power/>

Generators run out of gas, gasoline might not be locally available. Solar powered generators or small solar systems are essential.

Phone, refrigerator, how do you access water?, heating/cooling are key.

Document rebuild solar in Puerto Rico

## Passive heating/cooling

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/earth-cooling-tubes-for-ventilation-and-climate-control/>

Surround RVs with strawbale. What other insulation is cheap/easy?

## Heating

COMpost heat recovery

<https://livingwebfarms.org/multimedia/videos/expert-talks-discussions/compost-heat-recovery-webinar/>

Jean Pain videos

Low cost/low tech hot water heater DIY

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/diy-low-cost-solar-hot-water/>

Hot water harvest from wood stove

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/hot-water-harvest-from-your-wood-stove/>

Biogas

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/small-scale-biogas-digesters-video/>

The need for some heating solutions

<https://www.foxweather.com/lifestyle/north-carolina-no-heat-winter-hurricane-helene>

It's tough because the most cost effective solutions might be to repair the damage, and if the resources aren't available for that, I wonder what we do have to work with. So the oldest/cheapest tech we have are hearth stones, stones around whatever kind of fire we have, brought into the tent at night with us, or right into a sleeping bag. Next, TLUDs can burn clean enough to be used indoors. Use it to heat a large pot of water, which becomes a small radiator, prolonging the usable heat. If the shelter won't hold heat, fill every pot you've got, along with hearth stones, and heat them on a rotation. Then, like Susan said, a rocket mass heater. I'll add they can be made of bricks or even concrete blocks. For \$1,000 you can build a Russian oven which is an even better long-term solution. (Mike Hoag)

Insulation and wind breaks first, to limit cold drafts and to reduce the transfer of heat. Think foam board insulation and tyvek, or an inner warm space with an air gap to an outer wind break. Peter Hagen

Formal disaster management programs have 3-5 so called "pillars" or "phases" which usually include prevention, preparedness, mitigation, response (or relief) and recovery. This question seems to focus on response so I will confine the answer to this pillar but will say the primary mitigation goal is to restore transportation infrastructure which relates to the "provide heat" answer in many ways.

The answer for relief for cold and even extreme cold for most formal relief operations may surprise you. Basically "nothing" is sometimes the answer. Post disaster affected people tend to resolve the heat problem on their own. All that is really required for even extreme temperatures are blankets, clothing and other humans. Post disaster flammable materials are often available (collapsed dwellings for example) to build fires. Any fire if any kind is effective.

If external support is provided, space blankets are part of almost all initial response supplies regardless of the weather. Metalized mylar was actually designed as a heat shield not as a heat retention device. but because they are small and extremely effective and because they serve other functions as well, they are always provided.

I'm addressing short term. Psychologically, long term disaster management is more effective when it tends to try to begin recovery phase as early as possible. Usually after immediate loss of life risk is controlled and transport infrastructure is restored. Plywood, Tyvek, duct tape, nails and hammers etc will be provided very early in disaster response operations.

I can say a few things that might be universal:

The most important thing in my opinion is to keep the local government as an ally as they may have a reconstruction plan that is at odds with certain communities. In the problem is the solution way of thinking, sometimes permitting becomes a whole lot easier during reconstruction.

Community action is paramount. Establishing an effective community communication network is imperative. Find a forum to share best practices and case studies. Put experts knowledge in the right place for access by the community.

University professors in the development and planning departments will usually jump on board with anything that they can assess. They are force multiplying in my experience.

“Yes slow and small” and “do least effort for greatest benefit” is a great guardrail to keep bigger projects initially off the table. What I said about permitting applies equally to the government sector. As potential recipients of federal funding, local communities often knee jerk response is to add projects that have not undergone the usual impact studies and public hearings.

All of David’s book on RetroSuburbia has insights for restoration phase thinking and planning. It offers a different framework for looking at the community and the realms of action.

Older but also relevant are the transition town planning books and online resources.

Ways to inexpensively insulate badly insulated mobile homes, etc.

Luckily, there are many ways you can do this. No matter what type of windows you have, adding [weather stripping](#) around the frames is a great way to seal gaps and prevent air from coming inside. You can also use caulk to fill in small cracks and gaps around your window frames.

[Insulation film](#) is an excellent solution to give your single-pane windows a little help. It’s an inexpensive and simple way to add an effective extra barrier to your windows. You could even use [bubble wrap](#) as a cheaper alternative. However, it’s not as effective as quality insulation kits.

[Thermal drapes](#) are another fairly inexpensive and easy way to keep the cold winter air outside your home. Just be sure to leave the drapes open on sunny days to let in all that natural heat. If you don’t want to splurge for thermal drapes, you can also just hang up blankets.

It will also cool the chimney pipe in this location, possibly causing the buildup of creosote over time, raising the danger of a chimney fire,

Mounting a thermosiphon switchback to the back of the woodstove is a more appropriate means of capturing heat for hot water. See, for example, Ben Falk’s work on this.

For summer hot water in summer I plan to install a sewage methane digester which are used in every state of the Union and every country of the world. Simple and cheap to build

there is a Facebook group with many experienced people to show and tell. There is even a \$200 adapter you can put on a Briggs and Stratton generator to generate electricity on sewage methane.

I saw a podcast of a man using goat and chicken poop to make methane to heat his house, greenhouse and to cook starting a Briggs and Stratton electric generator, plug it into his EV and drove away on goat poop

The way I want to try to make hot water I saw at my first Permaculture Design Class in BC Canada was a 6'x8'x 4' insulated chamber with water pipes going back and forth filled with rotting wood chips. They ran the water from the compost box under the floor of the house and greenhouse. They had to install a temperature valve because got up to 180F. They told us it lasted about 18 months before the dug out the great compost and replaced the wood chips.

They said the community went together and bought a special wood chipper that chipped wood with riffles like a Lays potatoe chips so there would be more surface area on the wood chips for more efficient composting.

Then there are simple vegetation and chicken poop compost heaters I've seen at Central Rocky Mountain Permaculture Institute. Back in 86 Jerome heated his greenhouse with compost at 7800' and chickens body heat during 4 day blizzards with no solar gain at -20F.

Then of course there are solar water heating systems both very simple and complex you can use

<https://www.facebook.com/garylynnntucker/>

## Rocket stoves

<https://aprovecho.org/>

[https://www.amazon.com/dp/B0D4QBRWZZ?ie=UTF8&sp\\_csd=d2lkZ2V0TmFtZT1zcF9waG9uZV9kZXRhZWwp13NParams&th=1](https://www.amazon.com/dp/B0D4QBRWZZ?ie=UTF8&sp_csd=d2lkZ2V0TmFtZT1zcF9waG9uZV9kZXRhZWwp13NParams&th=1)

<https://www.amazon.com/Collapsible-Rocket-Stove-StarBlue-Carrying/dp/B09KTHYYL4?th=1>

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/rocket-mass-stoves-for-cooking-home-heat/>

Curtains are not just an item for interior design. Thick curtains insulate. Even better is to have a frame with padded cloth. You snap it into the window in the evening, and lift it off in the morning. Makes a big difference!

Insulate the floor with double rugs. Layers of curtains, rugs, blankets all help keep warmth in.

Then there is the good old trusty hot water bottle! Why heat the house, if you can heat yourself! When I sit down to read, I'll have one in my lap and another under my feet. I go to bed with them. As they have a wool jacket, they stay warm till the next morning.

<https://www.facebook.com/photo/?fbid=1975857752877194&set=gm.2684114848465707&id=295450413998841>







Cooling

Personal coolers

Transport fuel

<https://livingwebfarms.org/multimedia/videos/hands-on-demonstrations/woodgas-powered-truck/>

<https://livingwebfarms.org/multimedia/videos/expert-talks-discussions/alcohol-fuel-production/>

Minihydro

Low tech

[https://www.youtube.com/watch?v=q\\_exBnQINFs](https://www.youtube.com/watch?v=q_exBnQINFs)

Energyfish

<https://en.reset.org/mini-hydropower-plant-energyfish-generates-clean-energy-with-a-low-environmental-impact/>  
<https://energyminer.eu/wp-content/uploads/2023/09/Energyminer-Brochure-English-1.pdf>

Not sure if this is in prototype phase?

<https://www.facebook.com/reel/870655921664236>

## Microgrids

## Energy safety

Grid energy rebuild safety model

[https://energysafety.ca.gov/?utm\\_source=substack&utm\\_medium=email](https://energysafety.ca.gov/?utm_source=substack&utm_medium=email)

## Water

<https://community.waterstories.com/spaces/6969479/feed>

## Restoration of streams/ponds

Living pond restoration system (cleaning nutrient polluted ponds) - John Todd, low tech, simple

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/implementing-a-living-pond-restoration-system-video/>

## Earthworks

Good film about it by a master

<https://thinkinglikewater.com/r3-productions/>

How did people's earthworks do in Helene?

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/permaculture-earthworks-and-wetland-ecosystems-video/>

Earthworks (John Henry Nelson - fish, aquaculture, NRCS)

## Water filtration

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/small-scale-water-distillation-video/>

“highly encourage you to make this type of filter and practice. For details on making them, go to the Central Fire website and watch the archive of Sam Kennedy on water. He made us this filter and it works very well. It is budget friendly and easy to make. Few materials. It frees you from relying on store bought water. The filters are purchased online. They are ceramic diatomaceous earth. Cheap, high quality, and last a very long time. Don't let them freeze/thaw.

Cleaning the ceramic filters periodically is quick and easy.”

<https://www.facebook.com/photo?fbid=585016984135295&set=pcb.10161140381509480>

## Greywater

Biochar and moringa filter for greywater

[buff.ly/4gsvSZ3](http://buff.ly/4gsvSZ3)

## Rainwater harvesting

<https://morningchores.com/rainwater-harvesting/>

Beavers - do they have a role?

" Understanding Rainwater Harvesting System"

Here's a breakdown of the components and process:

Core Components:

- Rooftop: The primary collection surface for rainwater.
- Gutter: Channels rainwater from the roof to the downspout.
- Downspout: Directs rainwater from the gutter to the storage tank.
- Filter: Removes debris and impurities from the rainwater.
- Storage Tank: Stores collected rainwater.
- Pump: Pumps water from the storage tank for distribution.
- Distribution System: Delivers water to various points of use, such as toilets, washing machines, and gardens.
- Overflow: Releases excess water when the tank is full.



#### How it Works:

1. Rainwater Collection: Rainwater falls on the rooftop and is channeled into the gutters.
2. Water Diversion: The gutters direct the rainwater into the downspout.
3. Filtration: The rainwater passes through a filter to remove debris and impurities.
4. Storage: The filtered rainwater is stored in the underground tank.
5. Water Usage: The stored rainwater can be used for various non-potable purposes, such as:
  - Toilet flushing
  - Laundry
  - Garden watering
  - Car washing
6. Overflow: If the tank reaches capacity, excess water is released through the overflow pipe.

#### Benefits of Rainwater Harvesting:

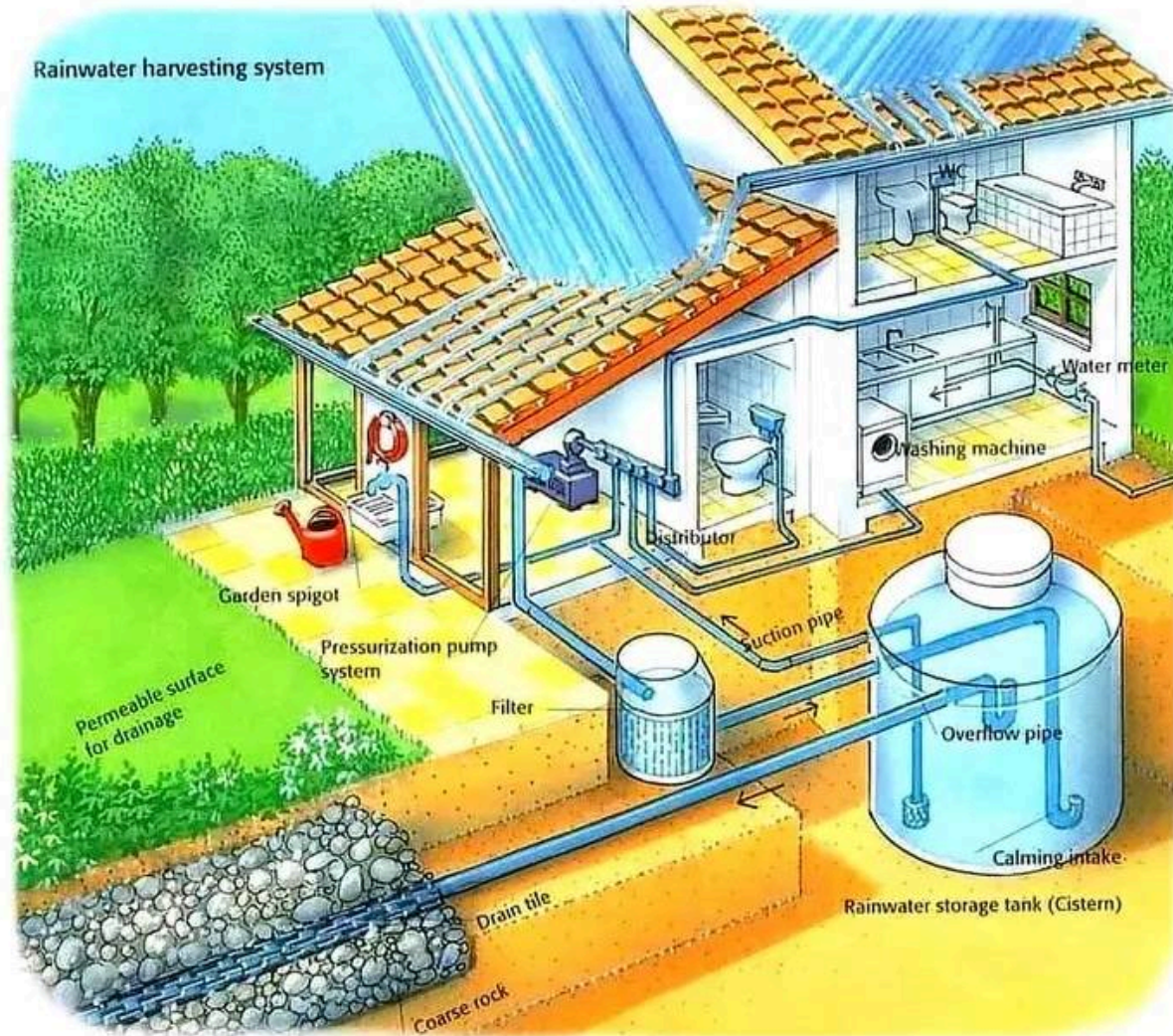
- Water Conservation: Reduces reliance on municipal water supplies.
- Reduced Water Bills: Can significantly lower water bills.
- Environmental Benefits: Reduces stormwater runoff and helps recharge groundwater.
- Improved Water Quality: Filtered rainwater is often cleaner than municipal water.

#### Key Considerations:

- Water Quality: Regular cleaning and maintenance of the storage tank and filters are essential to ensure water quality.
- Local Regulations: Check local regulations regarding rainwater harvesting and water usage.
- Tank Size: The size of the storage tank should be determined based on your water needs and local rainfall patterns.
- Water Treatment: For potable use, rainwater may require additional

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[#Engineering\\_Community](#)



RAM pump

<https://www.facebook.com/reel/1149756869569964> (can find a better one likely)

Stormwater management

Permeable pavement/depave models

<https://www.wired.com/story/los-angeles-just-proved-how-spongy-a-city-can-be/>

<https://www.depave.org/>

# Food growing

## Passive heated greenhouse

<https://www.solaripedia.com/files/1257.pdf>

<https://www.facebook.com/AllianceofNativeSeedkeepers>

## Climate battery

<https://www.youtube.com/watch?v=0x-1hLmAmBQ>

This guy has some low tech ideas for growing food in winter using mini walapinis made from compost - dig a hole, surround with warm compost on 3 sides, plastic on the sunny side, plant a dwarf citrus

<https://www.facebook.com/chads.produce/>

## Food security -

panel discussion regarding food security in Appalachia

<https://livingwebfarms.org/multimedia/videos/expert-talks-discussions/food-security-disaster-resilience/>

Overview of food security in Appalachia, by Appalachian Regional Commission

<https://www.arc.gov/wp-content/uploads/2022/04/Agriculture-and-Local-Food-Economies-in-the-Appalachian-Region-April-2022.pdf#page=8>

## Agroforestry

<https://www.fs.usda.gov/nac/resources/>

## Soil building

Note: Farmland floods every year somewhere in the US. The USDA has a lot of info on this and recovery from it. It has both pros and cons. It can bring in fertility from upstream. The problem is there can also be contaminants (see Pollution/Sanitation for handlings for contaminants).

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/waste-not-urine/>

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/waste-not-wood-as-h-with-dan-hettinger-video/> (also under forestry)

Rebuilding after flood damage

<https://www.ncagr.gov/news/press-releases/2024/10/11/soil-management-recommendations-hurricane-impacted-western-nc>

(more thorough version)

<https://soilmanagement.ces.ncsu.edu/2024/10/considerations-for-planting-into-agricultural-fields-after-flood-events/>

<https://extension.sdstate.edu/managing-soil-and-soil-fertility-after-flooding>

<https://www.soils.org/files/science-policy/caucus/briefings/farming-after-flood.pdf>

Seed saving

<https://livingwebfarms.org/multimedia/videos/expert-talks-discussions/seed-saving/>



**SEED SWAP & SHARE**

Saturday, December 21  
2-4 PM

**@ HOMEPLACE BREWING UPSTAIRS**

Seed saving is about more than growing food: it preserves culture, flavor, and memories that connect us to place and each other. Bring some seeds to share or come ready to receive from other gardeners.

**FREE TO ATTEND & ALL ARE WELCOME**

Co-hosted by Food Hubs for Climate Smart Agriculture, Song to Seed, and TRACTOR Food & Farms to build climate resilience in our local food system.

The poster features three logos at the bottom: Song to Seed Farm (a circular logo with a green field and a sun), TRACTOR Food & Farms (a red logo with a white tractor), and Food Hubs for Climate-Smart Agriculture (a circular logo with a green field and a sun). To the right of the logos is a large illustration of a corn plant with yellow cobs.

Food preservation

Preserving fruit with clay

TECHNOLOGIES FROM THE PAST...

To make a kangina, an ancient Afghan method of preserving fruit, you can follow these steps:

- **Prepare the bowls:** Mix mud, straw, and water to form two bowl-shaped layers.
- **Bake the bowls:** Place the bowls in the sun to dry and bake for about five hours.
- **Fill the bowls:** When the bowls are completely dry, add about 1–2 kilograms of unbruised fruit to each bowl.
- **Seal the bowls:** Cover the fruit with more mud to seal the kangina.
- **Store the kangina:** Keep the kangina in a cool, dry place away from direct sunlight, such as a cellar. Some people bury the kangina underground.

The kangina method works best for certain types of grapes, like the Taifi grape, which has thicker skin. The fruit can stay fresh for up to six months.

## Animals

<https://www.thesaturdaypaper.com.au/news/rural/2024/12/07/planning-protect-animals-disaster#mtr>

## Recovery assistance

USDA Disaster assistance

Recovery, farming,

<https://www.farmers.gov/protection-recovery/disaster-tool#step-1>

### Carolina Farm Stewardship Association

Join this informational session to learn how you could provide on-the-ground mentorship and support to Helene-impacted farmers applying for USDA relief programs as a contractor through CFSA's Helene Recovery Assistance Initiative.

Register: <http://carolinafarmstewards.org/.../helene-recovery...> (link also in bio)

How the Recovery Assistance Initiative Works:

- Objective: to provide technical assistance to 400 farmers in impacted counties.
- Contractor Qualifications: Familiarity with FSA, NRCS, and other USDA programs; ability to travel to farms in the affected regions; ability to commit 10 hours per assigned farm. Compensation details on website.

Informational Session Details:

- Friday, January 3rd, 2025, 12-1pm



- Virtual, registration required: <http://carolinafarmstewards.org/.../helene-recovery...> (link also in bio)
- Who should attend: Individual farmers who have familiarity with FSA, NRCS, and other USDA programs, as well as food system practitioners and nonprofit organizations who can assist farmers with FSA, NRCS, and USDA applications
- Application process: Applications will be distributed after the informational session, to be due by 5 PM on January 10.

## Community/people

### Stories

<https://www.facebook.com/photo/?fbid=10163923818464692&set=a.46912409691>  
<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/cooperative-economic-models-for-our-region/>

### Climate refugee communities

Stephen via Sharon Joy. Andalusia, Alabama, refugee town for coastal Alabama.

Cascadia bioregion <https://cascadiaunderground.org/first-cascadia-congress/>

### Groups

Swannanoa Resilience Corp proposal

<https://symbioticfund.wordpress.com/2024/11/27/can-we-create-a-resilience-corps-on-the-swannanoa/>

NOTE: American Community Outreach Network is a front for militia  
 3%ers

China supporting rural villages:

<https://www.alizila.com/taobao-villages-driving-inclusive-growth-rural-china/>

## Communications

Effective communications to enhance water management

[https://qatium.com/pdf/Comms&WaterManagmentHowUtilitiesCanCommunicateBetter.pdf?utm\\_source=substack&utm\\_medium=email](https://qatium.com/pdf/Comms&WaterManagmentHowUtilitiesCanCommunicateBetter.pdf?utm_source=substack&utm_medium=email)

Fog of disaster - how to improve access to accurate info (the problem outlined here):

[https://www.theatlantic.com/ideas/archive/2024/10/hurricane-helene-misinformation-ai/680160/?gift=9xpfQnSUK66ac1k6So5CoAn1SQLhHcqDwlajPSIGJLw&utm\\_source=copy-link&utm\\_medium=social&utm\\_campaign=share](https://www.theatlantic.com/ideas/archive/2024/10/hurricane-helene-misinformation-ai/680160/?gift=9xpfQnSUK66ac1k6So5CoAn1SQLhHcqDwlajPSIGJLw&utm_source=copy-link&utm_medium=social&utm_campaign=share)

## Economics

Mapping capital for resilience/recovery in WNC

<https://symbioticfund.wordpress.com/2024/10/14/mapping-the-capital-to-create-neighborhood-scale-resilience/>

Mutual aid

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/cooperative-economic-models-for-our-region/>

<https://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/mutual-aid-agriculture-resilience/>

Lessons learned

<https://crimethinc.com/2024/11/13/after-the-hurricane-anarchist-disaster-response-in-appalachia>

Getting the word out about where tourist dollars are welcome is key in fall/spring especially  
Trout fishing alone is \$1B industry

Local community based:

<https://symbioticfund.wordpress.com/2024/12/12/ashevilles-community-garden-network-combines-food-security-with-climate-resilience/>

Environmental impact bonds, a way to pay for environmental repair?

<https://bthechange.com/impact-bonds-and-the-possibilities-of-regenerative-finance-c70b01b237cf>

Regenerative investing

<https://symbioticfund.wordpress.com/2024/12/09/the-new-regenerative-economy/>

What the pause to IRA/BILs means to WNC

<https://appvoices.org/2025/01/23/ira-infrastructure-appalachia/>

## Prepping

Alternatives to Starlink

<https://www.inverse.com/innovation/starlink-alternatives>

. [Why Progressives Should Become 'Preppers' - <http://Progressive.org>]([https://progressive.org/latest/why-progressives-should-become-preppers-doerr-20230713/...](https://progressive.org/latest/why-progressives-should-become-preppers-doerr-20230713/)) [1]

2. [Preparing for the apocalypse the rational way - Red Pepper Magazine]([https://redpepper.org.uk/environment-climate/food-agriculture/doomsday-prepping-anarchism-mutual-aid-horizontal-decision-making/...](https://redpepper.org.uk/environment-climate/food-agriculture/doomsday-prepping-anarchism-mutual-aid-horizontal-decision-making/)) [2]

3. [Reclaiming Power: Mutual Aid in the United States - Socialist Forum]([https://socialistforum.dsaua.org/issues/special-issue-the-covid-crisis/reclaiming-power-mutual-aid-in-the-united-states/...](https://socialistforum.dsaua.org/issues/special-issue-the-covid-crisis/reclaiming-power-mutual-aid-in-the-united-states/)) [3]

4. [How To Prep - Strange Matters](<https://strangematters.coop/preppers/>) [4]

5. [Mutual Aid, Anarchist Preparedness and COVID-19 - The Anarchist Library](<https://theanarchistlibrary.org/library/rhiannon-firth-mutual-aid-anarchist-preparedness-and-covid-19...>) [5]

"The Future is Disabled" by Leah Lakshmi Piepzna-Samarasinha

[https://www.goodreads.com/list/show/143617.The\\_Post\\_Apocalyptic\\_Rebuilder\\_s\\_Library](https://www.goodreads.com/list/show/143617.The_Post_Apocalyptic_Rebuilder_s_Library)

Samuel Delaney's Heavenly Breakfast

Peter Coyote's book "sleeping like a leaf" and Freeman Houses "totem salmon

"Live Like the World is Dying" podcast by @magpiekilljoy

Active Hope Joanna Macy

[Resiliencemaps.org](http://Resiliencemaps.org) = mini-language for thinking about vital needs in practice, prioritising & redesigning the systems that provide needs & communicating needs & haves.

[Resiliencemaps.org/files/fluscim](http://Resiliencemaps.org/files/fluscim). Add [appropriedia.org/Aerosol\\_pandem](http://appropriedia.org/Aerosol_pandem) ... Talk with friends.

<https://observerranch.com/>

<https://vks737.radio/wp-content/uploads/2017/10/survival.pdf>

[resilientcommunities.network](https://resilientcommunities.network)

[climatesafevillages.org](https://climatesafevillages.org)

<https://collegeofwellbeing.com/resilience-practitioner-training/>

r/TwoXPreppers

<https://www.liveliketheworldisdying.com/basic-prepping-gear/>

<https://www.deanspade.net/mutual-aid-building-solidarity-during-this-crisis-and-the-next/>



# Community/Network

# Individuals

## John Henry Nelson/Patryk Battle

Living Web Farms - 600 videos of practices

Long term organic and bug person

Earthworks, stream banks, medicinal herb farmers, seed saving

## Daniel Schmachtenberger -

working with various groups in Asheville region, has some whole systems viewpoints. His report:

Recap of our initial work responding to hurricane Helene and overview of what we are focused on next.

A few of the CRI team members including myself were living in the Asheville area when the storm came. One of our team members had massive property damage from the flooding and her dog died of acute poisoning from chemical pollution the flood left on her property. Other than that, we were all fortunate to fare well. Obviously many were not.

The fire marshall (and his nephew) in the small town where we live died in a landslide during the hurricane while working to rescue others. On a friend's property nearby one of the men was battenning down the hatches when the wind sent a piece of plywood at him and broke his neck. The roads were already destroyed so friends carried him out in the hurricane using a ladder as a stretcher. We met a man still in a state of shock the day after staying at a church who was a retired coast guard who had to dive under his trailer as the water was sending it at him from a flash flood. The water took out the whole valley he was in and some of his neighbors didn't make it out alive. A friend saw her neighbors, an elderly couple, get washed away. Countless stories like this.

If you haven't seen it personally and heard the stories, it's hard to really imagine. The two main rivers running through the town rose about 26 feet rapidly from the storm. A three story wall of water out of nowhere rushing down a river valley is a hard thing to really get a sense of.

These [videos](#) don't really convey it but give some sense. This [one](#) is just a minute. If you are wondering how affected the area still is 6 weeks later, [watch these](#).

The community response has been truly inspiring. From search and rescue missions to clearing roads to get to people who were stranded, local people have been working around the clock since it happened, risking their lives, to save and help people they've never met.

Many people who are fortunate enough to get to normally take infrastructure (and what it takes to maintain it) for granted, have gained a much deeper appreciation for people who know how to drive tractors and fix broken pipes and use chainsaws.

We were fortunate to be in good enough shape to be able to help out a bit. After clearing the trees in our path and helping some neighbors, we decided to try to get to where there was cell service so we could find out what was going on. As much as we've become used to and dependent upon it, losing internet and cellular was in some ways more impactful than losing water and electricity. Realizing this issue was affecting everyone's ability to coordinate their response, we decided to focus on communications infrastructure first. We bought all the starlink systems we could get in Charleston and drove back with them (along with generators, gas cans, chainsaws, water pumps, dehumidifiers, PPE, heaters, and other immediate needs).

Even though the fire department and other emergency services have radios to talk with each other, no one had access to call 911 or communicate to anyone where they were or what was needed. We prioritized getting those starlink systems to fire departments, search and rescue teams, sheriff stations, medical centers, road clearing crews, and the main community organizing hubs. This enabled their work, plus created internet zones people could come and use.

Then we connected with others bringing starlinks to the area and got them to more community centers, nursing homes, schools, churches, and to remote stranded areas. With the help of several people who came together to get more units, find out where they were most needed, and deliver and install them, we set up over 100 starlinks in the first couple weeks, with 75 set up at the most critical places within the first 5 days.

Here is a [video](#) from the leader of one of the first response crews about the effect it had getting communications.

- With the help of local operations like [Beloved Asheville](#), [Venture Unknown](#), and We are Love, we got many units to the most affected areas like Batcave, Gerton, and Swananoa, and to remote places like Spruce Pines, Burnsville, Ledger, Yancey County and some all the way out to Tennessee.
- Around a dozen more went to search and rescue operations – like [ARG rigging and rescue](#), [The Cajun Navy](#), and [Savage Operations](#) in Black Mountain – performing air drops and making first contact with stranded communities in hard to access areas.
- The ones being brought to stranded areas where the roads had been destroyed were delivered by helicopter, ATV, and [mule packers](#).
- Many units went to local churches, school systems, nursing homes, fire departments, sheriff stations, hospitals, and community centers.
- A few went to a group of midwives who were responsible for bringing in new life into the world in the midst of a disaster.

- One unit went to the software development team working on [Ashevillerelief.com](https://ashevillerelief.com). Another to support the water distribution efforts undergone by [Be Well AVL](#).
- Here is a [video](#), made by a collaborator, of units being delivered to hard hit remote areas, and another [news report](#) detailing the devastation and how vital the starlink we brought them was for enabling communications.

Even with the amazing local response and incredible work being done, there is vastly more that needs done than there are resources for. For many remote areas it's being estimated that it might take a year to get electricity and internet back on. Countless people whose homes were destroyed are displaced. Many are in tents as we head into winter. Others are trying to get back into their homes out of necessity that have mold damage from the flooding. (One [Stanford study](#) showed that after a hurricane, death rates stay significantly elevated for the next 15 years - likely due to factors like moldy buildings and toxic exposure from flooding. We don't want that to happen here.)

So much of the infrastructure in this region was destroyed and needs rebuilt. There is an opportunity in that. Some areas that were built with extreme weather in mind were fine, right next to places that were built without the extra security that were decimated. How we rebuild really matters. This could be one of the most disaster resilient areas in the country in a few years if we design with that goal in mind. If we rebuild similarly, there will be more disaster that could have been prevented in the future. The understandable desires to build back quickly, and with the least expenditure could foreclose the opportunity to rebuild better. In the most likely path ahead, while a lot gets repaired and rebuilt, a lot will also slip through the cracks. A lot of the chemical pollution from flooded chemical and sewage plants won't get properly remediated. Many people will go back into homes and buildings that have mold issues and will get chronic health issues as a result. Many of the poorer people who lost their homes and jobs will not be able to get the aid they need and end up much worse off. It does not have to go that way.

Given the wake up call about resilience and the need for such comprehensive rebuilding, some high level goals seem clear and possible. In 5 years, there should be less moldy homes than there were before the storm. The environment should be cleaner and healthier than it was. The watershed should be more robust. The infrastructure and homes should be designed to be more resilient. People without much money should be economically better rather than worse off.

Wrapping up this initial emergency response, we are putting together a small task force to work with and in support of the other groups doing good work, to help expedite recovery and make sure we do what we can towards ensuring that we are rebuilding better. We are talking with leaders of other projects about what they need and assessing where the greatest gaps are. We just started working on a few new focus areas involving school repairs, immediate and long term housing, fire prevention, tree clearing, water testing, mold solutions, legal aid, etc. There will be a post with more info about that project soon. It will include a link to donate and to get in contact.

Many people participated in what we've worked on to date. More than can be named but I want to highlight a few. Chad Fuentes and Charlie Kubik brought more units in than anyone else, with

their own money at first, then crowd funding for more. Andrew Hewit made a request form with information about needs so we could prioritize the units based on where they would serve the greatest need. Cathy Bliss, Zac Wine, Tiffani Hardt, Ben Cote, and others who weren't in the area but helped with research and connections remotely. The many people who helped deliver and set up supplies, particularly in hard to reach areas. Jerilyn Stone, Chris Eddy, Sophia Karuna, Summer Fae who were with me and dove in to help. And the people who donated the money needed to get the starlinks and tools: Sanjiv Sidhu, James Schmactenberger, Wes Carter, Liv Boree, and others.







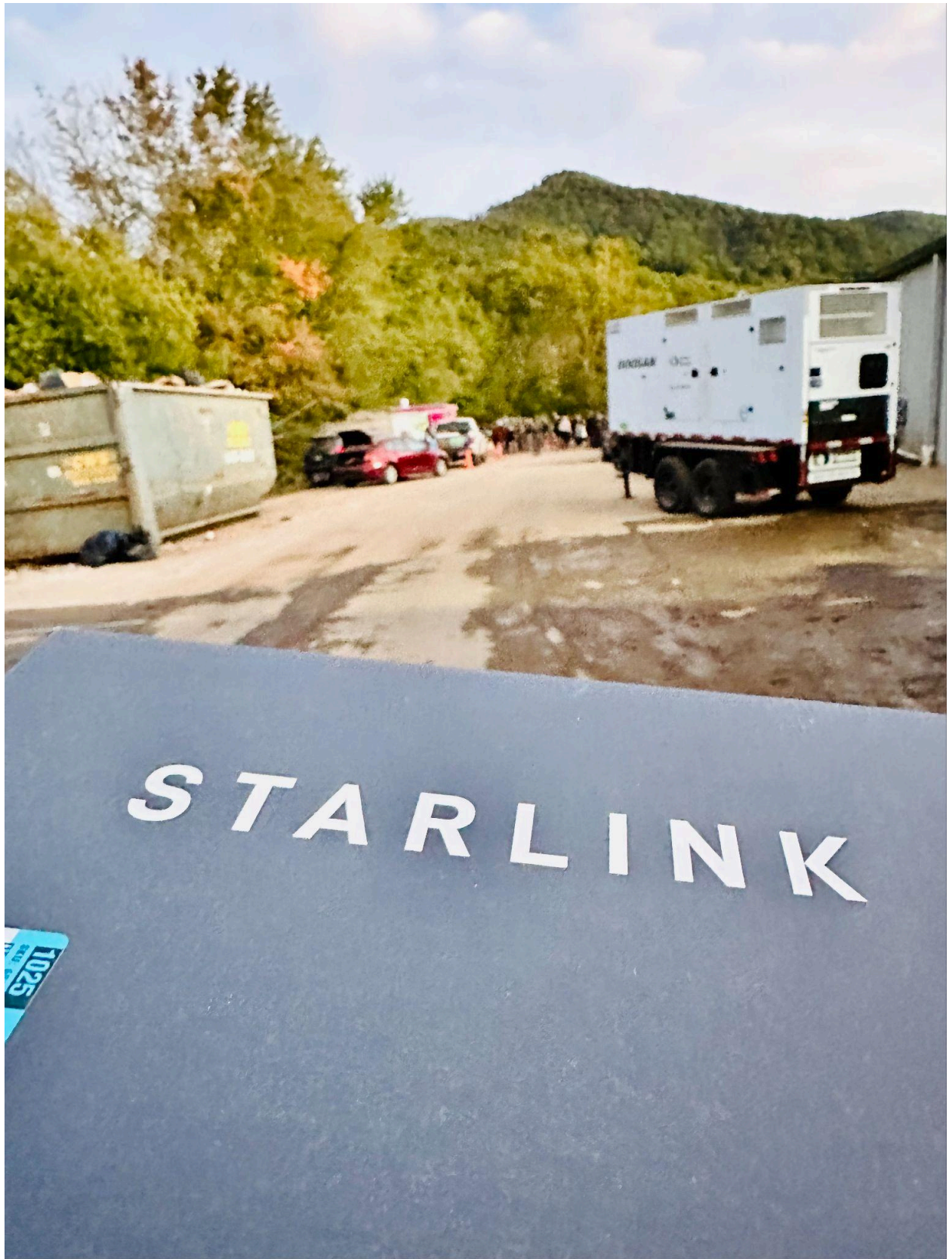


























# Resources

# Resources

## Book recommendations

### Fire

Bushfire Safety Tips Joan Webster

Conducting Prescribed Fires: A Comprehensive Manual John Weir

### Survival

Tom Brown's Field Guide to Wild Edible and Medicinal Plants Tom Brown, Jr.

Tom Brown's Field Guide to Wilderness Survival Tom Brown, Jr.

Tom Brown's Field Guide to Nature Observation and Tracking Tom Brown, Jr.

Tom Brown's Field Guide to the Forgotten Wilderness Tom Brown, Jr.

Urban Survival...Tom Brown Jr.

### Ecology

Tending the Wild M Kat Anderson

The Journeys of Trees Zach St George (migration of trees and communities)

### Water

Rainwater Harvesting for Drylands Pts 1 and 2 Brad Lancaster

Create an Oasis with Greywater Art Ludwig

Water Storage Art Ludwig

Builder's Greywater Guide Art Ludwig

### Plants/Farming

Stormscaping: Landscaping to Minimize Wind Damage in Florida Pamela Crawford

Seed to Seed Suzanne Ashworth (seed saving)  
Earth Sheltered Solar Greenhouse Book Mike Oehler

## Building

The Barefoot Architect Johan van Lengen  
\$50 and up Underground House book Mike Oehler  
Earth Sheltered Houses Rob Roy

## Medicine

Where There is No Doctor David Werner  
The Survival Medicine Handbook Joseph Alton  
Herbal Antivirals Stephen Buhner  
Herbal Antibiotics Stephen Buhner

## Waste Management

Humanure Joe Jenkins

## Economics

Local Money Peter North  
No More Throw Away People Edgar S. Cahn (time banking)

## Technology/energy

Appropriate Technology Sourcebook by Ken Darrow and Rick Pam

## Community

The Empowerment Manual Starhawk  
People and Permaculture Looby Macnamara  
Nomad Century Gaia Vince (climate-caused migration)

## General

Retrofitting Suburbia David Holmgren

Toolbox for Sustainable City Living Cott Kellogg and Stacy Pettigrew

Regeneration Paul Hawken

When the Grid Fails Ky Furneaux (simple techniques for a wide variety of survival situations, well illustrated)

When Technology Fails Matthew Stein

The Complete Book of Sufficiency John Seymour (have not seen or read this)

How to Rebuild Civilization in the Aftermath of a Cataclysm Lewis Dartnell

Back to Basics Abigail Gehring

## Optimism

What if We Get it Right? Ayana Elizabeth Johnson

All We Can Save

The Serviceberry Robin Wall Kimmerer

The Reindeer Chronicles: and Other Inspiring Stories of Working with Nature to Heal the Earth, Judith D. Schwartz

## Disaster Management

## General

<https://docs.google.com/spreadsheets/d/1OaZLkpx5WMhw4Yzy5ZgXsRLTDvWVgn348uNz2i6GeuQ/edit?gid=1031785248#gid=1031785248>

Valley Strong Disaster Relief (central hub)

<https://docs.google.com/spreadsheets/u/0/d/1-1TjtvKKUSiHBd95iqePPtwDhV9Jl1VboSzL3R51jrE/htmlview>

[https://docs.google.com/document/d/1ReiRL05\\_ELxH86XWjj-vGGywB0QAe4hOWPeublaWKPM/edit?tab=t.0](https://docs.google.com/document/d/1ReiRL05_ELxH86XWjj-vGGywB0QAe4hOWPeublaWKPM/edit?tab=t.0)

<https://docs.google.com/document/d/1GgqHq8u-Z9iEI-vZ1tEsjKi3dGm5ejclF2f1hR7fbvk/edit?tab=t.0#heading=h.70y4c0ihpyf5>



## Mental/emotional health

For ongoing support:

-climate-aware therapists: <https://www.climatepsychology.us/climate-therapists>

-Good Grief Network programs: <https://www.goodgriefnetwork.org/all-programs/>

-Climate Cafes: <https://www.climatepsychology.us/climate-cafe-101>

0 minute guided practice: <https://www.youtube.com/watch?v=DnnJF1vxUQ0>

30 minute guided practice: [https://youtu.be/IzckSq93WR0?si=3\\_CuPqS1NOEhPZaN&t=498](https://youtu.be/IzckSq93WR0?si=3_CuPqS1NOEhPZaN&t=498)

full 1 hour session: [https://youtu.be/IzckSq93WR0?si=WFaCzvywiYv\\_c3EU](https://youtu.be/IzckSq93WR0?si=WFaCzvywiYv_c3EU)

## REbuilding homes

Rebuilding Hollars Come Hell or Highwaters. [Stephanie Johnson](#)

<https://www.facebook.com/profile.php?id=61567813571673&mibextid=ZbWKwL>

added it from their web page (rather than FB: [rebuildinghollars.com](http://rebuildinghollars.com))

[Corryn Goldschmidt](#) is with [Mary Beth Poole](#). Hi everyone, right now Western NC still has hundreds of homeless families with children and pets in great need of "hot tents", special tents that keep warm and prevent deaths as it's now bitter cold. These families are suffering, and many hot tents are on sale for Black Friday for \$124 through Sunday. Just one of these tents could help a family survive, keep pets and children safe and warm.

Thank you!

<https://a.co/d/2aWmEqP> - tents \$140

<https://a.co/d/bmfyTqm> - stove \$90

Either one is great, they do go together but you don't have to get both. Every bit helps.

Nanostead in Marshall is an excellent source that is aiding the very hard hit community in a big way. You can ship directly to them:

806 walnut creek rd marshall 28753



Also consider donating funds to a property hosting the displaced. These donations will go to building approved tiny homes, yurts, and hot tents.

[https://www.gofundme.com/f/support-winter-prep-for-haywood-county-rv-community?attribution\\_id=sl:3275f723-9145-4ea4-838a-dcfb5f745897&utm\\_campaign=fp\\_sharesheet&utm\\_medium=customer&utm\\_source=facebook](https://www.gofundme.com/f/support-winter-prep-for-haywood-county-rv-community?attribution_id=sl:3275f723-9145-4ea4-838a-dcfb5f745897&utm_campaign=fp_sharesheet&utm_medium=customer&utm_source=facebook)

[Kevin Jones](#)

Samaritans Purse

Baptist on Mission  
Rise Disaster Relief and Recovery  
Valley Strong Disaster Relief (central hub)  
Operation Anchor  
Emerge Ministries Stephanie Arthur Moore  
Cajun Navy (tiny homes)  
Appalachia Service Pjt - rebuilding for 50 years  
Helene Rebuild Collaborative  
<https://www.projectsskyline.org/>  
Emerge Ministries  
Mountain Angels Rescue  
Operation Helo (mobile homes)

## How to's

WNC list of web resources:

<https://livingwebfarms.org/resources/>

Disaster recovery from climate disasters:

Sara Meerow  
Andrew Rumbach  
Anuradha Mukherji  
Helen McIntyre  
TR Jeffery

Posting for visibility, GREAT initiative - and DO sign up for the newsletter (link in comments).

The HOW TO of Deep Adaptation - BLOG SERIES!

Doing brings many of us relief, helps us build community with others (not to mention opening doors to ourselves), gives us the sense that we're contributing somehow to reducing harm, to saving resources, to preparing for whatever may come.

The Comms/Editorial Circle wants to support doing as a pathway to being in the world. The invitation is to send us your detailed knowledge of HOW TO. This can be anything that you

have found supports you and others to enable and embody loving responses to our predicament.

HOW TO conserve or purify water; HOW TO build a rocket stove for fossil fuel free cooking; HOW TO save seeds, create compost on your balcony in the city, plant, raise and harvest fruits and vegetables indoors; HOW TO bypass modernity's infrastructures and still have access to online communications; HOW TO conserve and store fruits & veggies for hard winters/endless monsoons; HOW TO draw a map; HOW TO make pigments from natural materials; HOW TO upcycle clothings, metals, glass and plastics into useful or beautiful objects; HOW TO conduct research; HOW TO tango; HOW TO tell stories...

This DAF blog series (see our Submission Guidelines) will collect and publish the diverse wisdom we all apply to our daily realities without ever calling it wisdom. Let's open our minds and bodies to doing things that helps us be in these times. DAF Comms Circle is most willing to offer editing, shaping and encouraging support!

For questions or submissions contact either @Ramey or @Constance in the Community Space or email [blog@deepadaptation.info](mailto:blog@deepadaptation.info)

WaPo has low tech how to's? LOL! What is the world coming to? But it's great!

<https://www.washingtonpost.com/people/michael-coren/>

## Climate change info

ChatGPT conversations re: Choosing Earth (various drawdown scenarios) - PDF in files

Climate action steps (in files)

DA resources (climate, related education):

[https://docs.google.com/document/d/1x6PJptJ4aDTLtlKEMFNd-UwiALY6I14-12JYv6GtU\\_0/edit?tab=t.0](https://docs.google.com/document/d/1x6PJptJ4aDTLtlKEMFNd-UwiALY6I14-12JYv6GtU_0/edit?tab=t.0)

Emotional responses to climate change:

this is our private Discourse server community, <https://community.deepadaptation.info/>

But there is also a website - which is not a forum, as its for 1 way communications - other options for connecting on this page, on that website :

<https://www.deepadaptation.info/letsgetconnected/>

## “ An Action Plan

Start with yourself —> Find Your People —> Build Together —> Take Collective Action

Start with yourself:

Practice getting outside of your comfort zone

Audit what actions you are taking in service of your values (I love the ACT matrix)

Create a personal theory of change.

What kind of world do you want to live in?

How do you feel about how you're creating this world now?

What steps are you taking to get there?

What skills do you need to do the work?

Do you have the support you need to do it?

Are there books/theories/mentors that guide you in this work?

Are there groups to join that align with your theory of change?

Do what you can to increase your agency around your values. For example, while it's true that our individual actions aren't to blame for the climate crisis, taking steps to reduce your waste, use public transit, shopping more responsibly, can make you feel good and lead you to take larger action. And save you lots of money! (I love Leena Norms, who makes brilliant videos about this)

Use resources in your community, like libraries and parks.

Volunteer at a place that feels meaningful for you

Ask people to help meet your needs

Ask your friends what support looks like for them

Find Your People:

Meet your neighbors and learn their names

Have a block party and get to know each other

Have your friends over and talk intentionally about caring for each other

Find an affinity group locally for issues you care about or people that share an identity you have (labor unions, political parties, reading groups, LGBTQ spaces, etc.)

Build Together:

Offer care and support to elderly or disabled folks

Routinely share meals with friends

Plan a clothing swap (an event where people bring their clothes and exchange them with each other for free)

Plan a skillshare (an event where people come together and learn something new from someone in the group who has that skill)

Create a community safety plan for emergencies

Collective Action:

Have an honest conversation about problems that are impacting people in your village and community and brainstorm ways to solve it. Can you organize neighbors to help someone so they don't get yard fines from the city? Is there a single mom that could use some help? Is there an unsafe crosswalk on the route from your area to your school? Create an action plan and get it done.

Organize your people to show up together to a political action, town hall, or community meeting that is important to you

## Local relief

Organic Grower's School disaster recovery for farms and home growers

<https://www.organicgrowersschool.org/helene-recovery/disaster-resources>

Relief organization list

<https://docs.google.com/document/d/1Qj6LiCnDHyXq1KDZDUznBhRhrosouDkeswg4YsaFEx4/edit?tab=t.0>

Crowd sourced relief

<https://ashevillere relief.org/>

Triangle Mutual Aid

<https://www.patreon.com/posts/hurricane-helene-113563573>

(leaving this because of list of participants - could be mapped)

WNC Volunteers needed immediately- (the below needs are outdated but the community centers should serve as future centers as well)

Updated 10/31 by Tracie Adam's

\*\* All these locations can use volunteers. Most are open 9 to 5 or 9-6. Please read info included, contact location for more info. Just show up you don't have to sign up with any of these.

Bald creek Elementary school

100 Bald Creek School Road

Burnsville, NC

Lori Denely

Need help sorting supplies

Maynard Electric Company

117 Dugout circle

morganton NC

Need help sorting supplies

Neighbors feeding Neighbors

14 Jackson town road

Spruce Pine

Need help cooking & handing out food

Creston Fire Department

163 3 Top road

Creston, NC

Need of volunteers to sort supplies

Yancey County Rescue Squad

718 W Main St.

Burnsville NC

Need help sorting

Silverados

2898 US-70

Black Mountain, NC

Need help sorting supplies, chainsaw work, muck outs, etc

Pleasant Gap Church

2362 Double Island road

Green Mountian, NC

Need help sorting clothes & supplies

Appalachia Disaster coalition

Ask for Tracie 704-297-5381

Need help sorting clothes & supplies

Buladean Community Center

12190 NC 226

Bakersville, NC 29705

Mon - Sat. Closed Sundays

Help needed: Sorting, stocking, kitchen help. Also, Clean up, tree work, home repairs, fencing repairs, etc

Restoration Church Disaster Relief- Steven Lamberts Team

90 Buckeye Access Rd

Swannanoa, NC 28778

919-210-0867

Have food but Needs Cooks to cook for Volunteer Team// building supplies & builders// cleanup

3 meals a day & coffee, shower access, place to camp and park

Western North Carolina Livestock Center

474 Stock Drive

Canton NC

Need help with sorting supplies for people & animals, loading/unloading hay, making runs with hay

Banner Elk Resource center

185 Azalea Cir SE

Banner Elk NC

Daily Shifts 9:15am-1:15pm or 12:45-4:45pm no sign up needed

Need help sorting, organizing & personal shoppers

Hot springs Volunteer Booth

Gallery 339

US 25 across from the school

Thursday-Sat 10-2pm just show up

Sena volunteer@hotspringsrecovery.org

Cleaning, sorting, rebuilding

Olive branch cattle company

3259 Goose creek road Marion

Need help 10/29 with unloading 600 bales of hay- text 254-913-5402 to sign up

Spokes of Hope

3096 Memorial Hwy Lake Lure

Daily 8:30-9am to sign up

Need help with muck outs, cut-outs, carpentry & chainsaw teams

Hot springs volunteer booth

Gallery 339

US 25 across from the school

Thursday-Sunday 10am- 2pm NO sign up

Sena Volunteer@hotspringsrecovery.org

Cleaning, sorting and rebuilding

Blue heart Sanctuary

399 Hall road

Green Mountain

Need help starting 11/2

They have major damage and need all the help cleaning, cutting trees, and rebuilding etc

Morgan Hill Baptist church

594 Barnardsville Hwy Weaverville

828-645-8337

Need help sorting & distribution

\*\*They also have Red Cross confort tent with laundry, hot food, wifi & charging stations

Camping world aka Tom Johnson

1855 US70 W Marion

Need help organizing donations

Mon-Sun 9-5pm

Reynolds's Baptist church

520 Rose Hill Road Asheville

Go behind church to fellowship hall

Mon-Sat 12-4pm

Old Kimbrells building

200 W union st. Morganton



Need help sorting and organizing

Kristen 910-612-5579

Neonatal Kitten Alliance

21B pond St in Arden

Could use 2-3 volunteers a day Monday-Saturday for food pantry assistance only.

Esther 828-458-9961

Camp Miller

9511 NC 197 Pensacola NC

Need volunteers and kitchen help

Just show up

Yancey county Helene relief center

CALL 828-682-1883 for volunteer opportunities

Burnsville-

Josh Warren 828-284-9223

677 W E Hwy 19E bypass Burnsville

M-Sat. 8am-6pm

Help needed sorting & organizing

Marion- Jim Artman 828-447-3929

70 E court St Marion

M-Sat. 9am-6pm

Help needed sorting & organizing

Spruce Pine- Jamie Miller 843-566-5550

12183 NC-226 Spruce pine

M-Sat. 9am-4pm

Need help sorting & organizing

**\*\*There are literally dozens & dozens of places needing help! Please if you can come volunteer we will feed you best we can & be oh so grateful!**

Thank y'all so much for helping us!

Lodging you can either camp out or some are able to find hotels about an hour away now-depends on where you are volunteering. Bring your own food but some restaurants are starting to open.

If you have a place needing volunteers let me know! Text Tracie 704-297-5381

If you know for sure of some here please post the following info below: location, address, hours for volunteers, contact person if possible, jobs for volunteers. 📌

Just trying to connect volunteers with places who need them."

added from comments:

Budgie's Bakeshop Pantry

1808 Pisgah hwy Candler

Wed to Sunday 9am to 6pm

Contact Bri or James 828.365.8441

open for supply drop off or pick up

If you have a place needing volunteers let me know!

Text Tracie 704-297-5381

Posted/Updated by Tracie Adams

Just trying to connect volunteers with places who need them.

(From Koreen: I'm entering the best of these into WR spreadsheet, yellow denotes "complete", green denotes "I'm working on their list on their website" If both colors, I listed their overall website and am working on the list on their site)

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Donation Hub/Volunteer/Assistance List:

[swannanoagrassrootsalliance.org](http://swannanoagrassrootsalliance.org)

Grassroots Organizations:

[www.supportingwnc.com](http://www.supportingwnc.com).

Agriculture Assistance:

<https://southernagexchange.org/>

Donation Channel for WNC:

<https://www.dreamswnc.com/monetarydonations>

Helene Related Volunteer Opportunities:

<https://nc211.org/hurricane-helene-volunteer-opportunities/>

**Farmers Aid/Assistance:**

<https://www.carolinafarmstewards.org/cfsa-helene.../...>

Not SUPER Mobile Friendly, but a GOLDMINE of information:

<https://app.smartsheet.com/b/publish...>

WNC Recourse Guide:

[https://docs.google.com/.../1ReiRLo5\\_ELxH86XWjj.../edit...](https://docs.google.com/.../1ReiRLo5_ELxH86XWjj.../edit...)

Helene Volunteer Opportunities:

<https://docs.google.com/.../1-1TjtvKKUSiHBd95iqeP.../edit...>

Shelter Information:

<https://hurricane-helene-shelter-and-drop-off-centers.gli...>

WNC Support:

<https://docs.google.com/.../1q0s.../edit...>

<https://docs.google.com/.../1GgqHq8u-Z9iEl.../edit...>

WNC How to Help:

<https://docs.google.com/.../1JGhyBN3NO970ZxZFEQro.../edit...>

WNC Practical Life Tips:

<https://docs.google.com/.../1hDQHZvegBgifc.../edit...>

Helene Volunteer & Donate:

<https://docs.google.com/.../1-1TjtvKKUSiHBd95iqeP.../edit...>

Like minded projects

Deep adaptation groups

[https://docs.google.com/document/d/18gRpNzHEWGabSWm3rSvujULTXcU\\_9ceTIS9NC3QbE8/edit?tab=t.0#heading=h.auzcgci9dyxt](https://docs.google.com/document/d/18gRpNzHEWGabSWm3rSvujULTXcU_9ceTIS9NC3QbE8/edit?tab=t.0#heading=h.auzcgci9dyxt)

Islands of sanity (bioregional/local focus)

<https://www.facebook.com/neil.davidson.965/>

## FEMA/Mortgage ISSUES

If you haven't already filed with fema do so immediately and upload the claim denial letter from your insurance. Make sure you double check that you've answered every question. On the question asking if you're willing to relocate answer YES. By relocate they are meaning to a rental house, shelter or hotel which you've already done if you are renting. Then call your mortgage company to see what programs may be offered directly from them.

Just a thought as I lost many properties during the fall of the economy in 2009.

I had to stop putting money into the properties as I was not flush with cash. If you won't recoup your home don't spend \$\$\$\$. Yes go to bank and see what options are available. If you stop paying you will go into foreclosure. You will get a ding on your credit (likely). You move forward saving as much money as possible. Banks take risks and did with this property. Don't think you need to go into bankruptcy.... Keep track of your credit score and I'm hopeful landlords will work with you on renting. If you put \$\$\$\$ into mortgage and you never hope to live there, well I don't understand that. These are tough decisions. You will recover credit wise I did. I filed bankruptcy etc etc and have recovered nicely. It was painful. I learned I was more than my credit score. My brother also walked from a property he owned in Texas way back when there was an oil crisis. Sometimes this is what makes financial sense.

I don't know what is best. But I would ask a lawyer about a group filing against NC Insurance Commission.

Mexico Beach, FL did this as a community. Fought in court for 5 years before winning and receiving money back. Not an easy task.

Won't help your "current" needs. But insurance companies should not be able to disqualify everyone in your area based on "act of God" for those that had insurance in place.

We had same thing happen with Daytona Beach, FL. We had all the correct insurance- wind policy, flood policy, building policy, pool policy, seawall policy and got hit back to back by 2 hurricanes. FL insurance companies denied 135 buildings. I hope we will all file against the FL Insurance Commission. Might take years but we should get the money back that our insurance policy covered.

Call OnTrack Financial Education & Counseling, they set up a line for questions and if they can't help you, they'll be able to direct you to who can help you. 828-255-5166. They're a local non-profit who's been in Asheville for over 50 years. It's also not legal to charge for foreclosure prevention counseling in North Carolina, so don't pay for that, they won't charge you.

You can also file a complaint with the insurance commissioner. I would find other people that had the same insurance and got denied. There is power in numbers. The state of Florida ended up suing my insurance company because of so many complaints

Hire a public adjuster who will work for you

But get paid upon settlement

See if your bank can defer your payments. I lived in FL all my life. Sadly this is the norm. If you've got a good record of paying. Asking for a deference will help you. Can defer payments for many months.

It's usually better if you can arrange for a short sale (a Realtor can help you with that; they are usually the ones to negotiate with the bank) instead of a foreclosure. Both will greatly

damage credit, but a short sale can be easier to recover from. You'll want to be sure that your short sale is a total settlement with the bank with a guarantee that they will not file a deficiency judgment later (coming back to sue you for the amount they were "shorted" in the short sale).

Meanwhile, be sure that you've made arrangements with your bank to defer payments on a financial forbearance... They'll usually give you at least 3 months and will usually be willing to tack those payments on to the end of your mortgage. Let them know that you need time to explore options so that you have a habitable home to live in again and can resume payments (even if you intend to sell later...).

Bankruptcy can protect you further in case of a foreclosure... in some foreclosures the bank can ask for more money later.

You'll need to discuss all options with an attorney - they are the ones to ensure you are protected in all of this!

You can read more about the above options here....

<https://www.investopedia.com/.../whats-difference-between...>

Seek a lawyers advice 1st. 2nd- everyone who has been denied needs to come together & file a class action lawsuit against your insurer, regardless of who it is.. There is a thing called 'truth in lending' which protects consumers from predatory lenders & though your lender is legit-they are going to take the loss financially- it's they who you will be fighting for. You are repaying a good faith loan to them- & if you default they have the house as collateral. With the property being condemned- the asset that your insurance company agreed to cover for the mortgage company to give you said money to OWN- & now rebuild- is what said company will lose. The insurer is in breach of contract. Acts of God are what insurance companies COVER whether it's wind or mud. Flood insurance is different. The inspector said it was a landslide- that's MUD.

everything with FEMA's pending but their Max for you all would be \$42,000 I believe which would be nothing- there are three programs I Believe by buncombe county that are buying back homes but you have to be in a flood zone I think I don't have all the information as I've seen them listed on several of the western North Carolina recovery sites- have you reached out to Samaritan's purse and some of the volunteer groups they've been doing wonders for many people?

Please check out Brakefire Disaster Relief - they are also helping people with insurance denials!!

In Florida after Hurricane Ian. Insurance companies denied or low balled the work that was needed.

Most had to hire "Public Adjustor's" who will challenge and show the insurance company a realistic dollar of your loss and why it happened. Not necessarily to landslide.

A Public Adjustor charges I believe 10%+ of the amount awarded to you.

Good Luck so sorry you are in this ugly situation.

I've been a homeowner for many years and if I was in your shoes I would start getting estimates on how much money it would cost to make your home livable- and not inflated costs like many of these contractors will provide you with-I've been in Asheville since 1979 and some of the prices for getting things done are three times the normal price it's sad to say- after you compile that list reach out to some of these organizations Samaritan's Purse, Baptist Church, Western North Carolina resources, Rubicon these are just a few of organizations that are out here helping people- see if these volunteers can help you at least make your house livable and then go from there-when you start fighting the insurance company it will take years and I don't know how old you are or how much stress you want to deal with-once you get a dollar amount on what it would take to fix your home it'll put a lot of things in perspective-if it's under \$100,000 and you feel you would want to take out a loan and possibly get some grant money as well that would be an option-as one of the comments was to walk away from it might unfortunately be another option-but having a dollar sign on what would affect your house will be a lot easier to make these decisions-good luck prayers are up

FEMA will eventually help you re-build but it will take 12, 24, maybe 36 months. There is nothing wrong with filing a Chapter 13 bankruptcy, especially if you can continue paying other creditors and list only your house on the bankruptcy petition - this will keep what good credit you have but modify your mortgage to an amount determined by your disposable income (after you make your rent payments) for a period up to seven years. Lawyers really are a dime a dozen these days so look for a good one who only does bankruptcy.

Reach out to Kim Winters team at movement mortgage- they've been helping folks get the FHA disaster relief loans with zero down - i work in real estate and we've talked to soooo many people about different scenarios and options - home insurance agencies, attorneys, and lenders - and this really seems like the best option for a lot of folks who are in similar situations. I'm so sorry you're going through this.

Is your home in the flood zone? Can you rebuild? BeLoved Asheville is helping folks repair their homes... and will be the focus moving forward. They are also getting IT'S for temporary housing on your property. Not a long term solution, but a safe place to live while you rebuild.

Lancaster Law and Ed Treat / Pisgah Legal are two wonderful caring lawyers at excellent firms. I have worked with both and trust them 100%!

If this specific situation is not in their wheelhouse, they could refer you. Definitely worth a call. good luck!

Emerge Ministries is accepting applications for possible help rebuilding/repairs and other things. Please reach out to them

Look over the land and see if a tiny house could be placed there. There are organizations donating them. Samaritan's Purse and Operation Helo are two that I know of. If you can get one donated and it can be placed there keep paying on your loan and keeping building to the house. Heck it might turn out better than what you had at the end of it all

<https://www.usa.gov/disaster-mortgage#:~:text=The%20FHA%20offers%20mortgage%20insurance,to%20make%20a%20down%20payment>

Hurricane Helene: If you are affected by the storm, Legal Aid of North Carolina offers disaster-related services.



[Learn more](#)

# Helene Disaster Assistance



## Legal Aid NC Helpline

If you wish to contact Legal Aid NC for disaster-related legal issues, call our Helpline:

[Cajun Navy 2016](#) has partnered with an organization out of Oakland Maryland to help with tiny homes as well.