Dunloup Creek Watershed
Voluntary Floodplain Buyout

Fayette and Raleigh Counties, West Virginia

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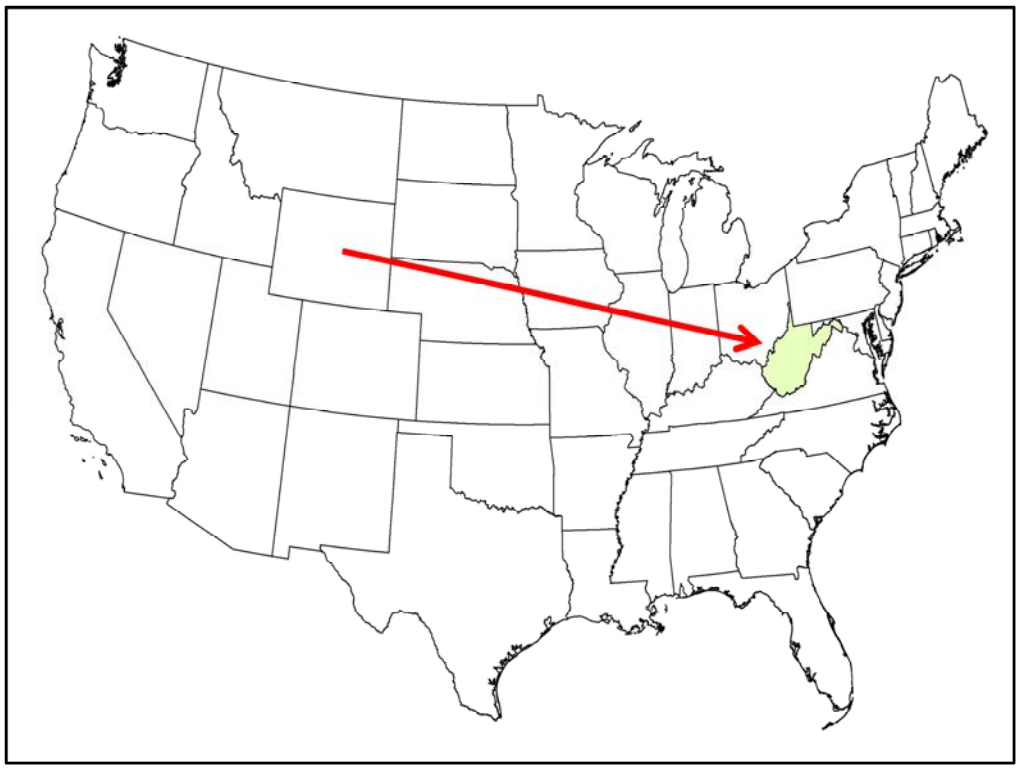
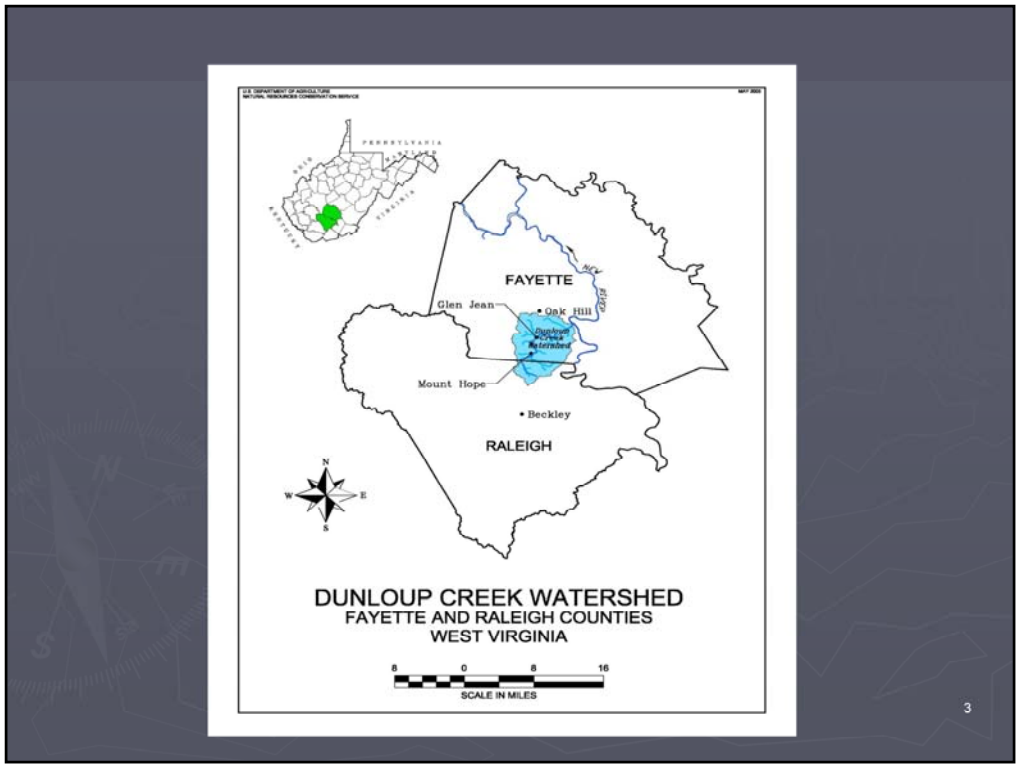
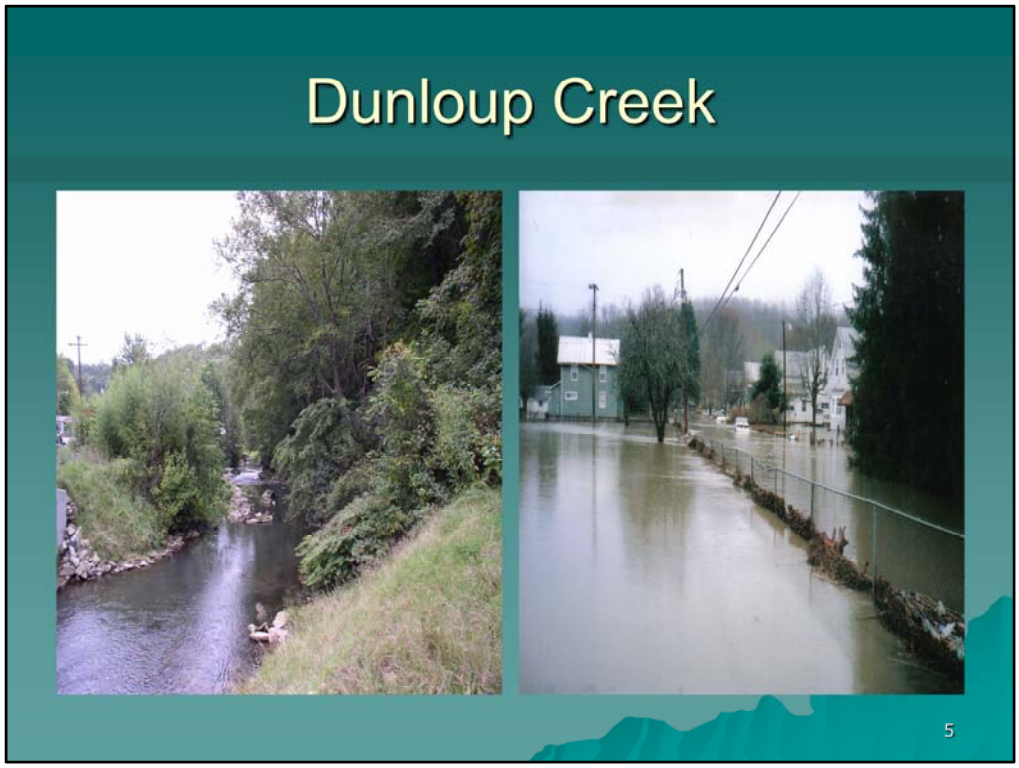




Slopes in the southern coal fields are generally 35% and commonly exceed 55%. Building sites are extremely limited. Any flat land is at a premium in much of WV.

New River Gorge. Dunloup Creek is a tributary to the New River. Note the very narrow floodplains with very little flat land for building. World class white water rafting, hiking. Boy Scouts of America are building a 10,000 acre Adventure Camp in the Gorge.

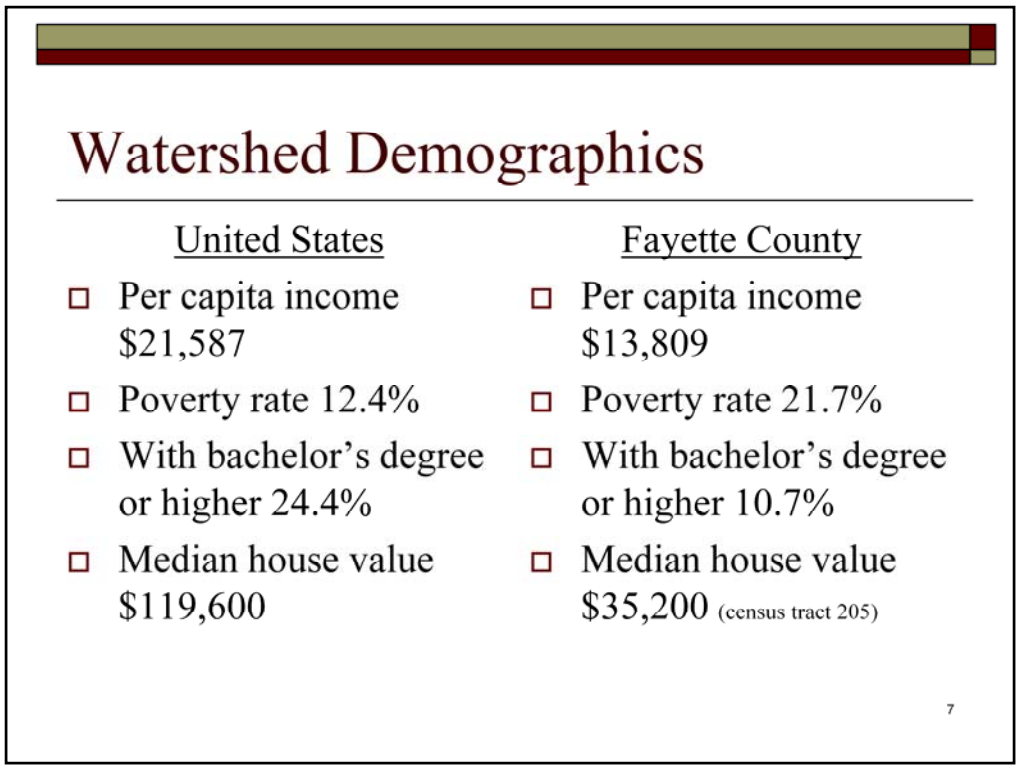


Left: Dunloup Creek at normal flow.

Right: Dunloup Creek during a flood event.

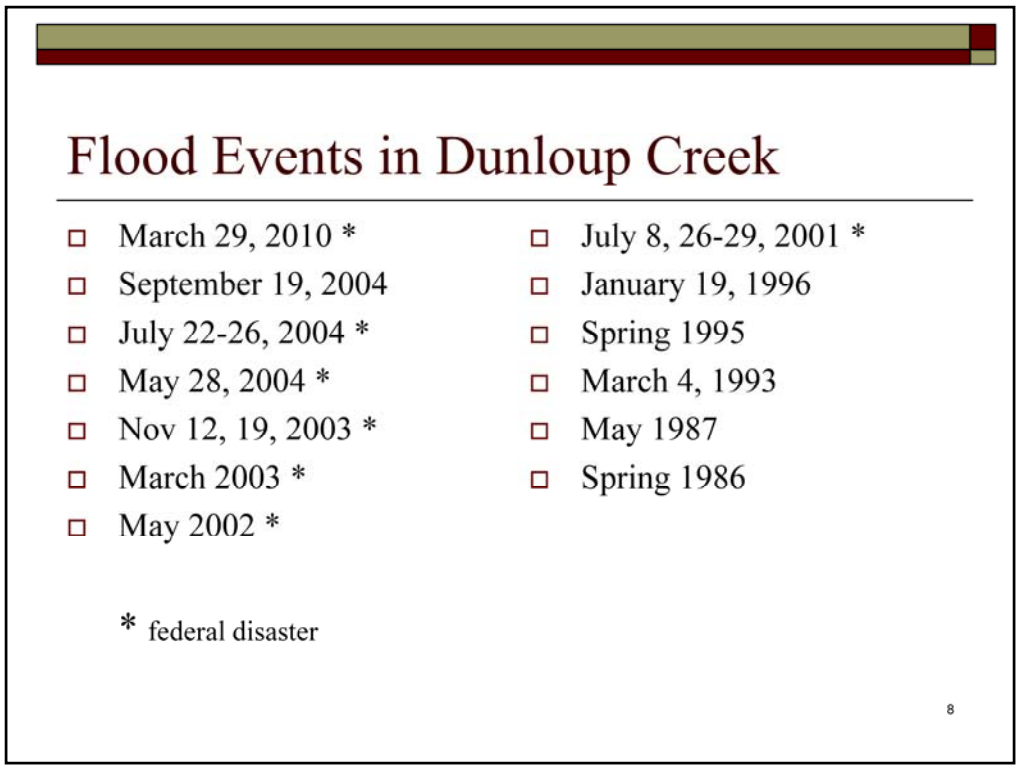
The creek is narrow during normal flow and wide during a flood event.

Most of the buildings are located on the flat land alongside the Dunloup Creek. The 100 year floodplain is generally hillside to hillside, encompassing everything in between. Notice the mountains close behind the buildings!



The Dunloup Creek watershed is an economically distressed community – justifies higher cost share rate on project. Source for data is the 2000 Census.

Statistics for Dunloup Creek Watershed are even more depressed than Fayette County at large. The median house value in the Dunloup Creek area is $22,000.



7 disasters since 2001 so the residents of the watershed were in a constant state of cleanup and recovery from flooding.

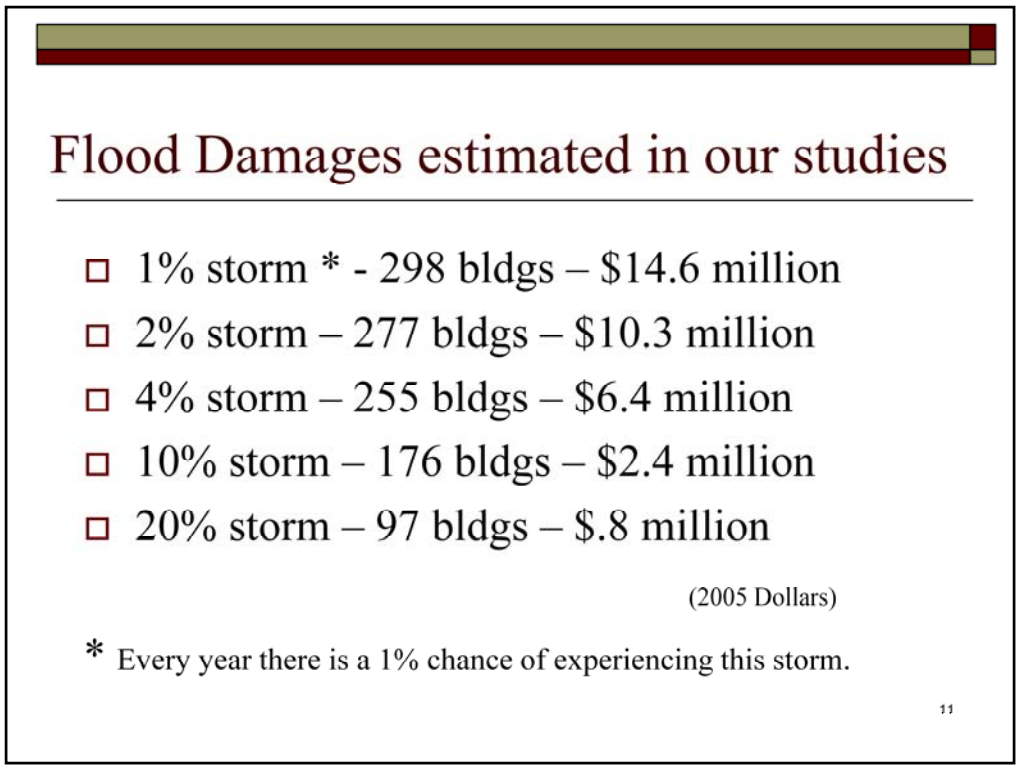
Majority of residents do not have flood insurance.

March 2010 flood. Federal disaster declaration.

See the high water marks on the house to the right, just below the window sill.

We must remember that the pictures of flooding were taken after the water has gone down enough to allow picture-taking.

The debris lines on the fences indicate that the water was much higher.



A 1% storm is also called a '100 year event' but this term is often misunderstood. There can be multiple '100 year storms' within the same year. NRCS conducted economic and hydrologic studies, gathering extensive field data, to model the watershed.

A 1% storm means that every year, there is a 1% chance that the severe storm will happen. This is a result of statistical analysis. As such, the actual year may have no such severe storms, or may have more than one such sever storms. It might be useful to think about hurricane predictions. At the beginning of hurricane season, there are forecasts of the number and severity of hurricanes for that season. The forecasts are not guarantees.

Why is flooding so severe in Dunloup Creek?

- Topography

  Why does this matter?

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Look again at the width between the water and the hillsides. Not much room for buildings and infrastructure.

Topography

- Flat land limited to the floodplains
- Roads and utilities are in the floodplain – cost prohibitive to put on top of the mountains
- Buildings are located near roads/utilities
- Therefore, everything encroaches on the stream and high water events

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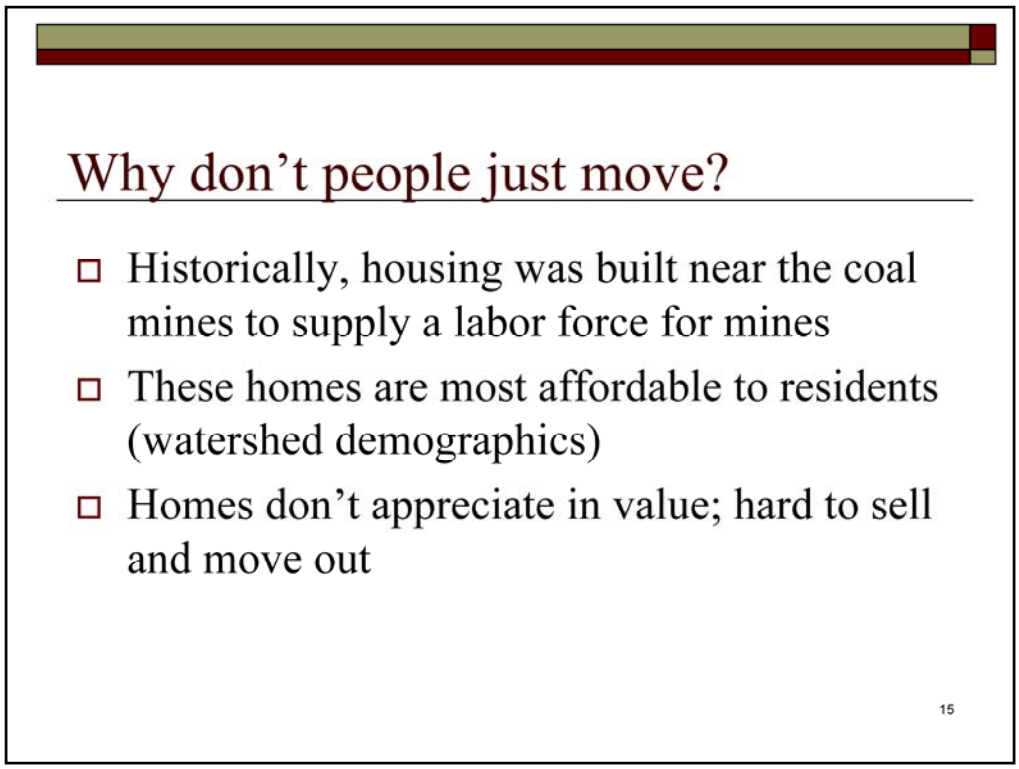
Note the encroachment of the house on the stream. When not flooding, the natural stream channel is on the far right, beyond the ‘posted’ tree.



Also, in many WV watersheds, mining and timber companies hold large tracts of land so it is not available for residential development.

The obstacles to moving are many …

- Housing that is near the community, but outside of floodplain, expensive/limited
- Economics
- Residents like their local community and want to stay

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Any questions about the community or the flood history?

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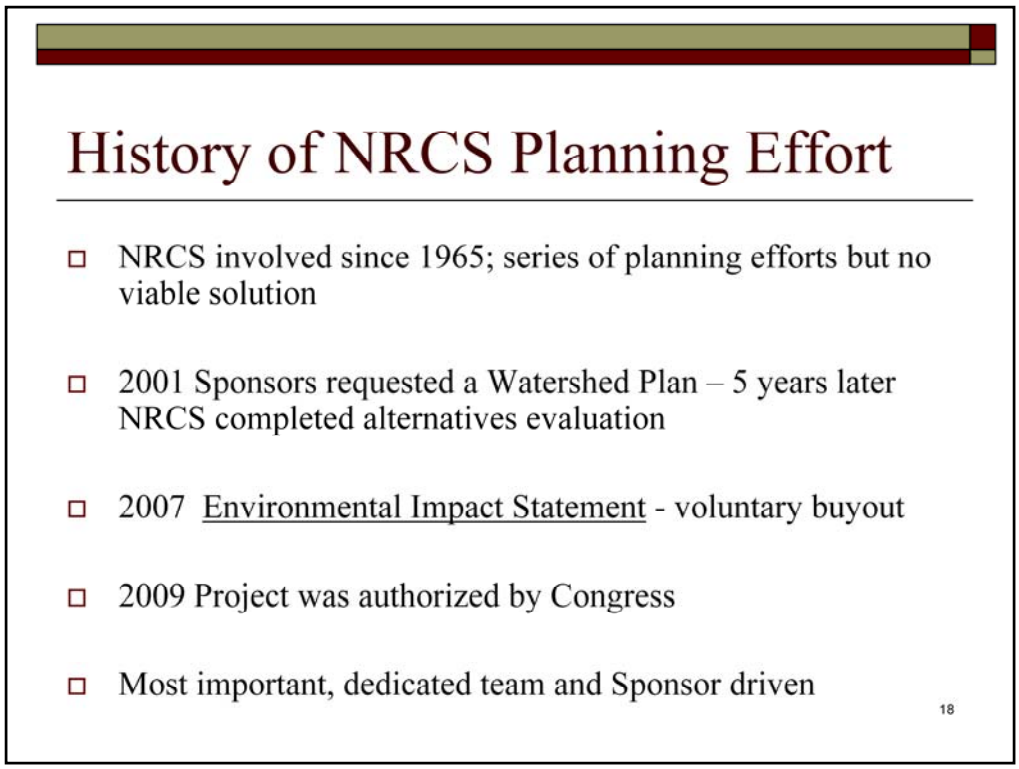

Long history and agency commitment to seek solutions. Perseverance on the part of residents and community leaders. Sponsors are Fayette County Commission, City of Mount Hope, WV State Conservation Committee, Southern Conservation District. NRCS Watershed Projects must have Sponsors so it's a federal / local partnership.


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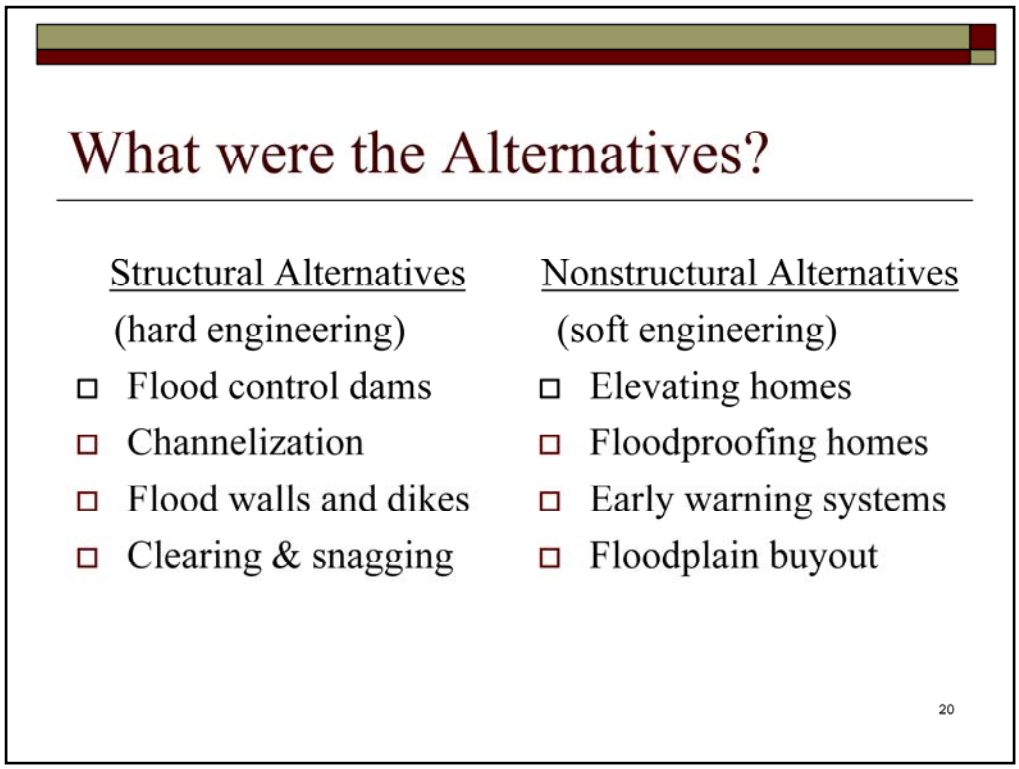

Structural Alternative is an *hard* engineering solution – concrete and steel – usually involves controlling the water.

Nonstructural Alternative is a *soft* engineering solution – modifying buildings or installing warning systems or buying out properties.

Hard Engineering Alternatives

Structural Alternatives

- Flood control dams: 2 physical possibilities, too far upstream, too far downstream. Needed grouting ~ very expensive.
- Channelization: Not enough room to straighten the stream. Topography.
- Flood walls and dikes: Not enough room.
- Clearing & snagging: Ineffective, high maintenance, topography, water speed.

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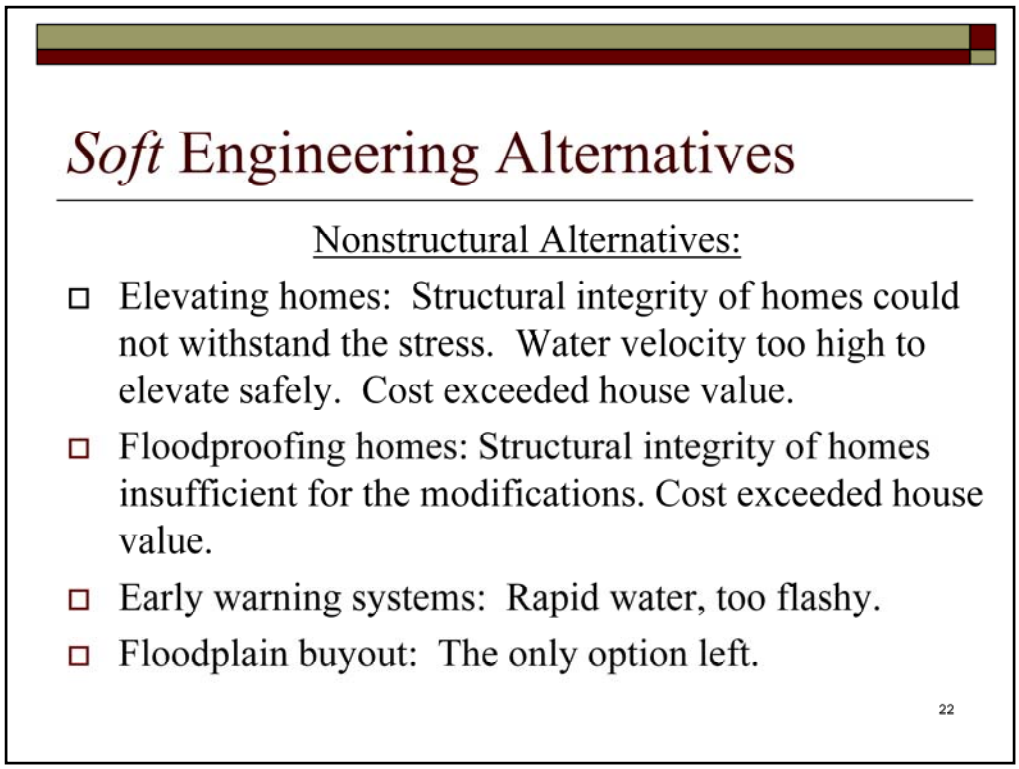

Major concern was the population characteristics. Elderly population at risk. Swift water rescues and emergency responders are more likely with elevating, floodproofing.

Floodplain Buyout: The advantages

- ✓ Least cost
- ✓ Solves problem 100% for takers
- ✓ Evacuation not a problem for the elderly
- ✓ Reduced emergency responder burden
- ✓ Acceptable as long as its voluntary
- ✓ The area is restored to natural conditions
- ✓ No environmental issues raised by EPA, USACE, WV Environmental Agencies

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Another example of flooding in the watershed. See the high water mark on the house siding, just below the window.

Floodplain Buyout: The concerns

- ✓ Loss of property tax revenue
- ✓ Loss of customers from public water system
- ✓ Project will hasten the exodus of people from the area
- ✓ Neighborhood will change
- ✓ Voluntary, so some properties remain
- ✓ Perpetual easements must be monitored
- ✓ Flat land is constantly being sought for development
- ✓ NRCS charting new territory with project – lots of internal hurdles

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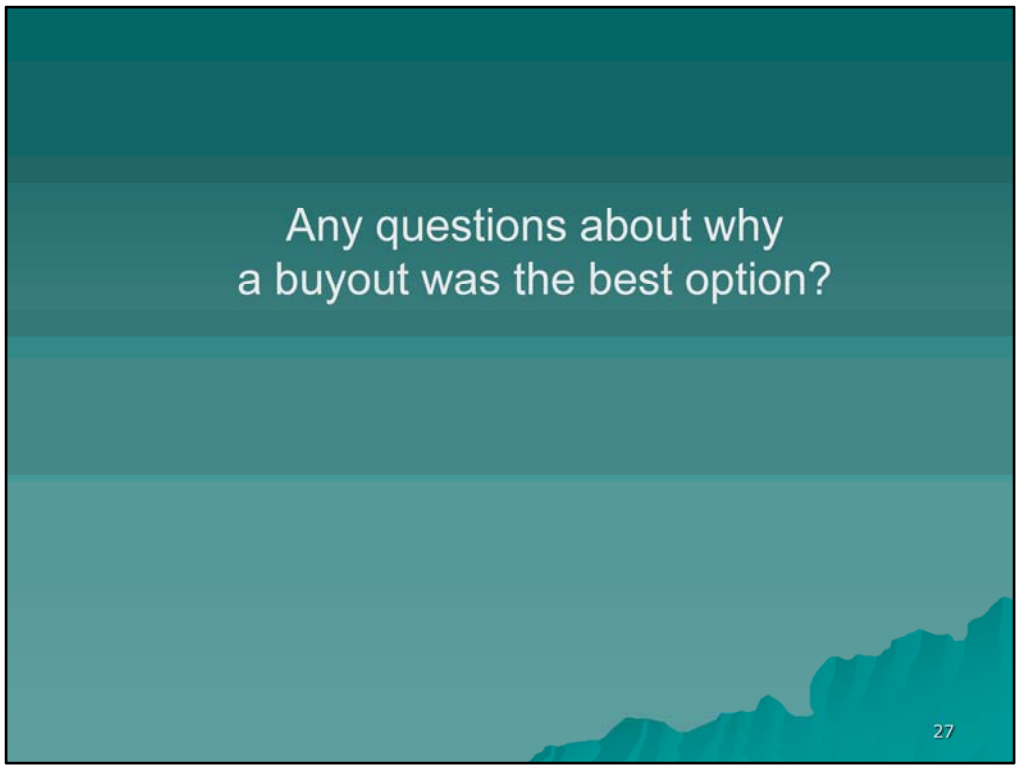
Any questions about why
a buyout was the best option?
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How do we actually do this? *social side*

- Building relationships was/is key
- The same people stayed with the project as much as possible
- We talked a lot. Public meetings, one-on-one, door to door, phone calls, rumor control, newsletters, media
- Emphasis was that project is voluntary – by choice
- Other expertise used - bankers, home builders, county commissioners, social services, legal aide

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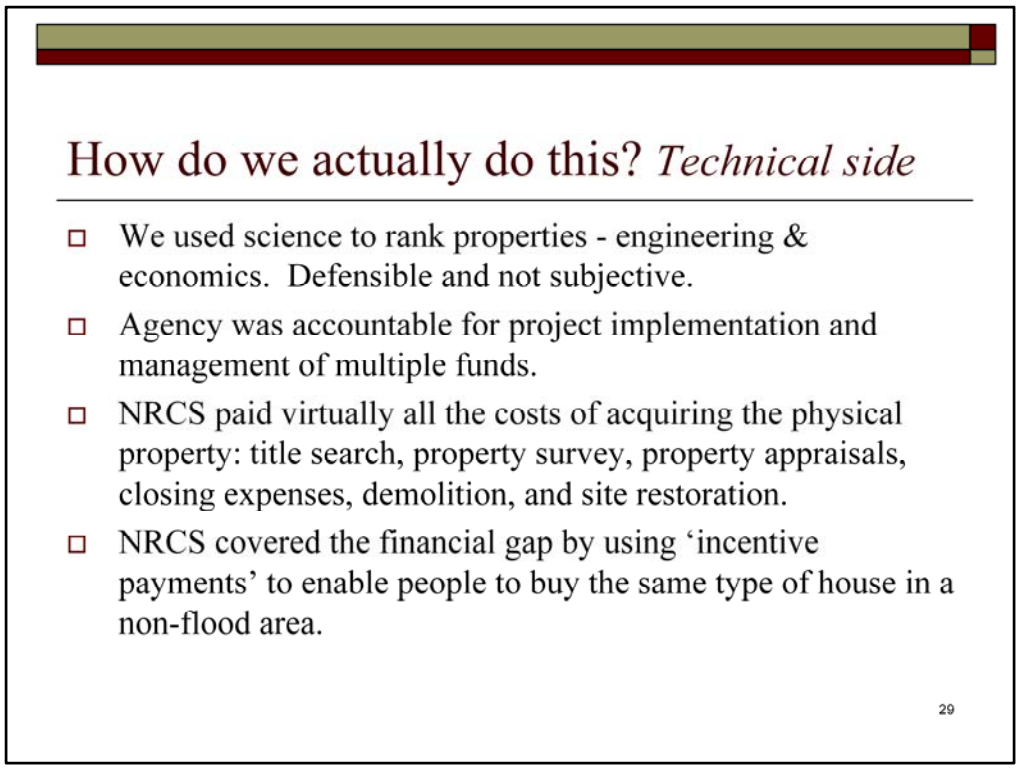

Lots of field work – elevations, building descriptions, stream measurements,

What do the Sponsors do?

- Fayette County Commission administered local contracts for all the work
- The state agreed to contribute 10% cost share
- NRCS agreed to contribute 90%
- County and the City accept title to the properties and agree to keep the floodplain in natural condition in perpetuity.
- Local watershed group controls rumors (tries to!)

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Pre & Post Buyout

Property # 5 before **Property #5 after**

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The Economics

Recall the flood damage estimates for the various storm intensities. Our studies showed the range was $0.8 million for the most frequent storm, to $14.6 million for the least frequent storm in our range. (2005 Dollars)

The Buyout cost $13.9 million ONE TIME.

In contrast, the flood damages (recall the flood history) were frequent and expensive.

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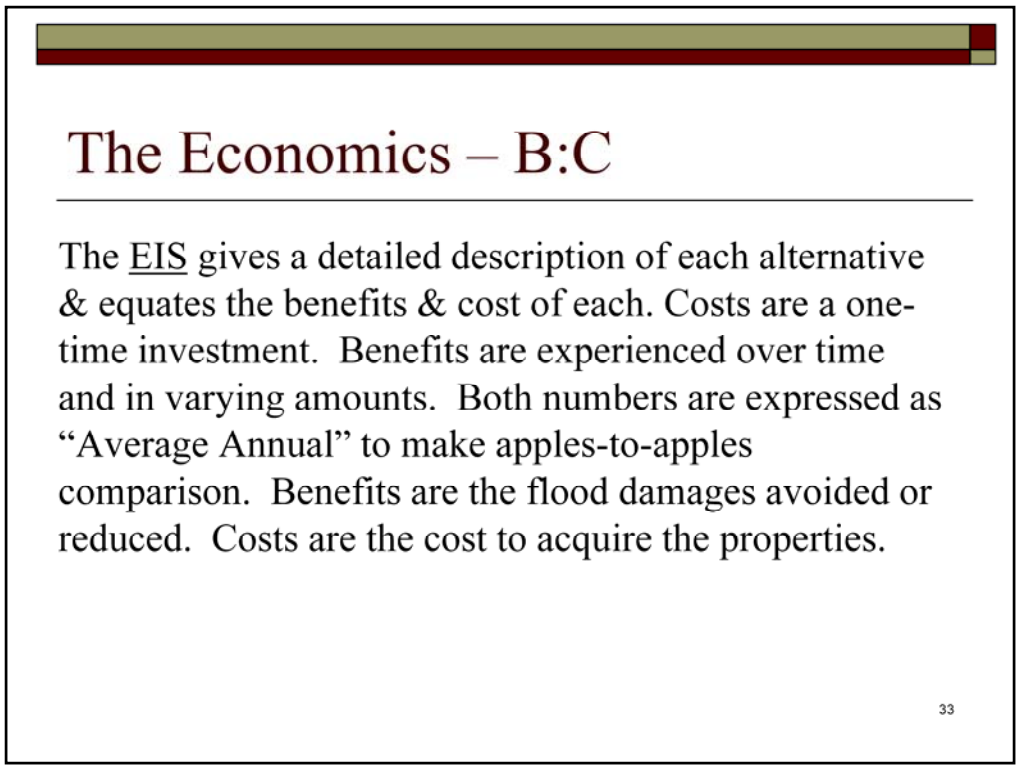

EIS- Environmental Impact Statement

The Economics – B:C

The total project cost $13.9 million when expressed annually = $ 648,800 per year

The total project benefits, when expressed annually = $1,029,000 per year

$ 1,029,000 / $ 648,800 = 1.5 / 1.0

Note: The Buyout is 100% effective for those who move.

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What happened?

- 255 applications received; exceeded expectations
- Rapid implementation
  - ✓ Application period closed September 2009
  - ✓ First house closing - August 2010
- 13 property owners have withdrawn
- About ½ way through project; 10-12 closings per month
- Now closing on the 100th house.

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NRCS leadership talked with the homeowners who accepted the buyout. The feedback was very positive.

The flooding continues and the project continues.

Dunloup Creek Watershed

- http://www.wv.nrcs.usda.gov/programs/watershed/dunloup/dunloup.html
- A follow-up webinar about the specifics of watershed economics is possible
- Pamela.Yost@wv.usda.gov

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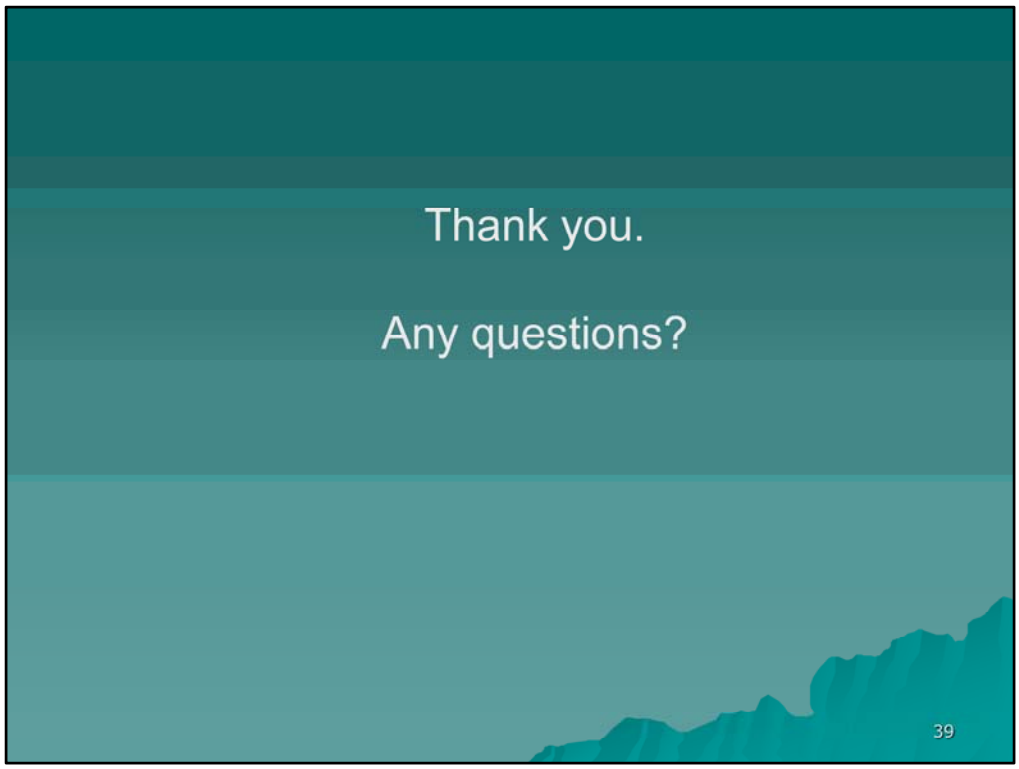
Thank you.
Any questions?
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