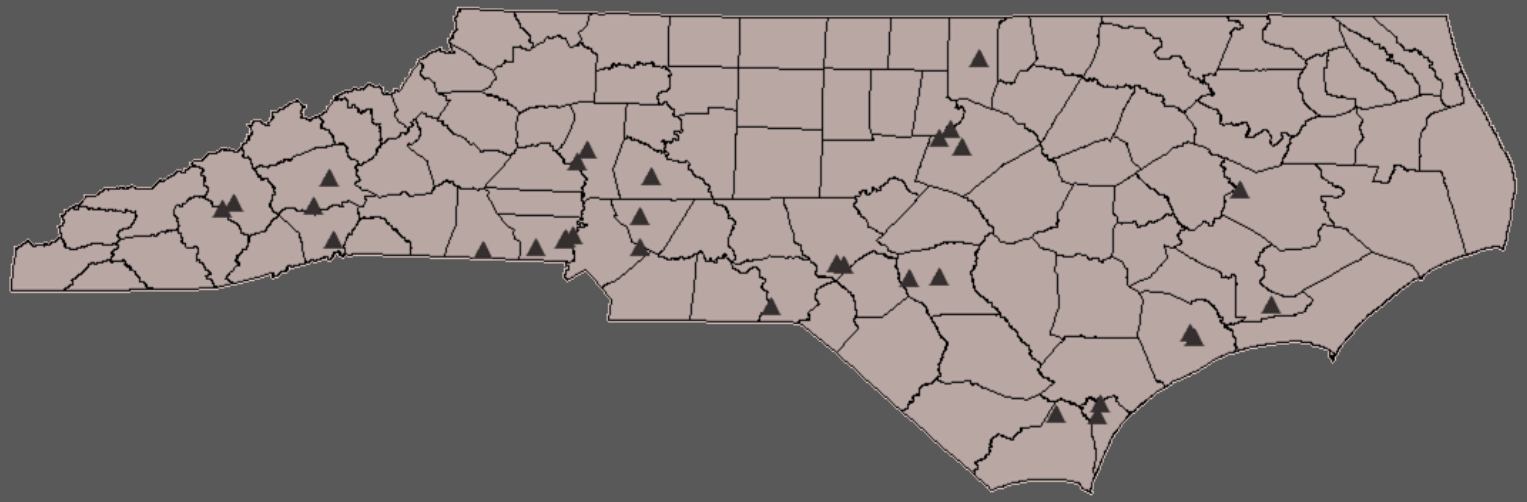
Understanding community knowledge and concerns at newly designated National Priorities List (NPL) sites in North Carolina



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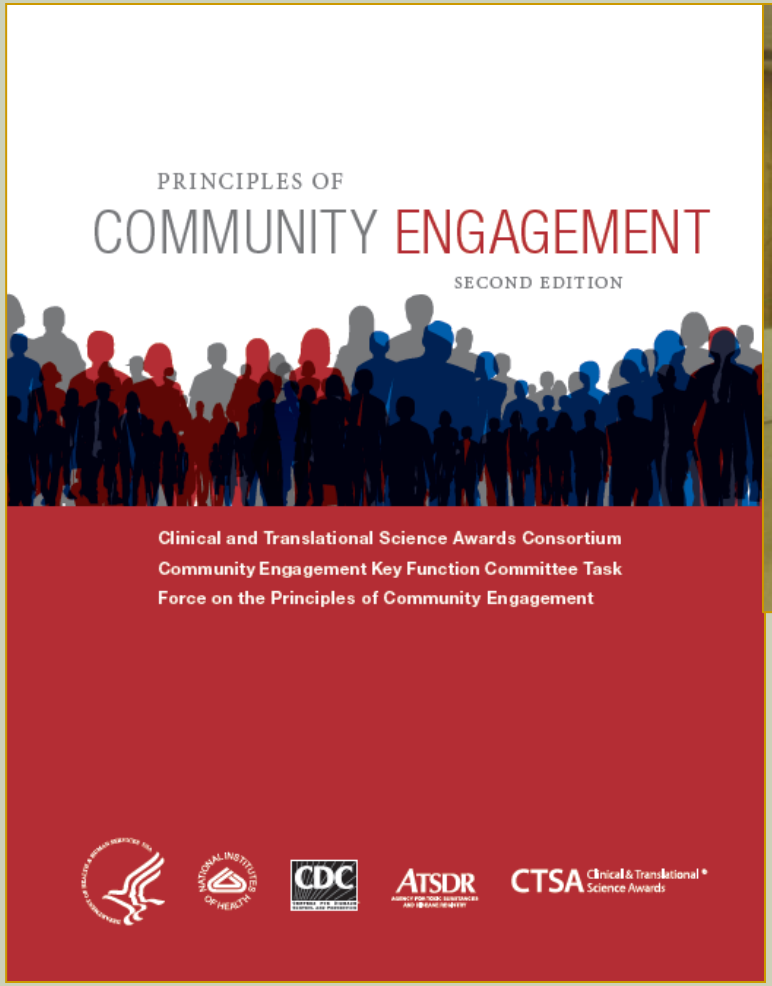
Research Translation Core
UNC Superfund Research Program

Project partners

- **UNC Superfund Research Program**, Research Translation Core
- **NC Division of Public Health**, Health Assessment Consultation and Education (HACE) Program
  - Cooperative agreement with **ATSDR**

Why this project?



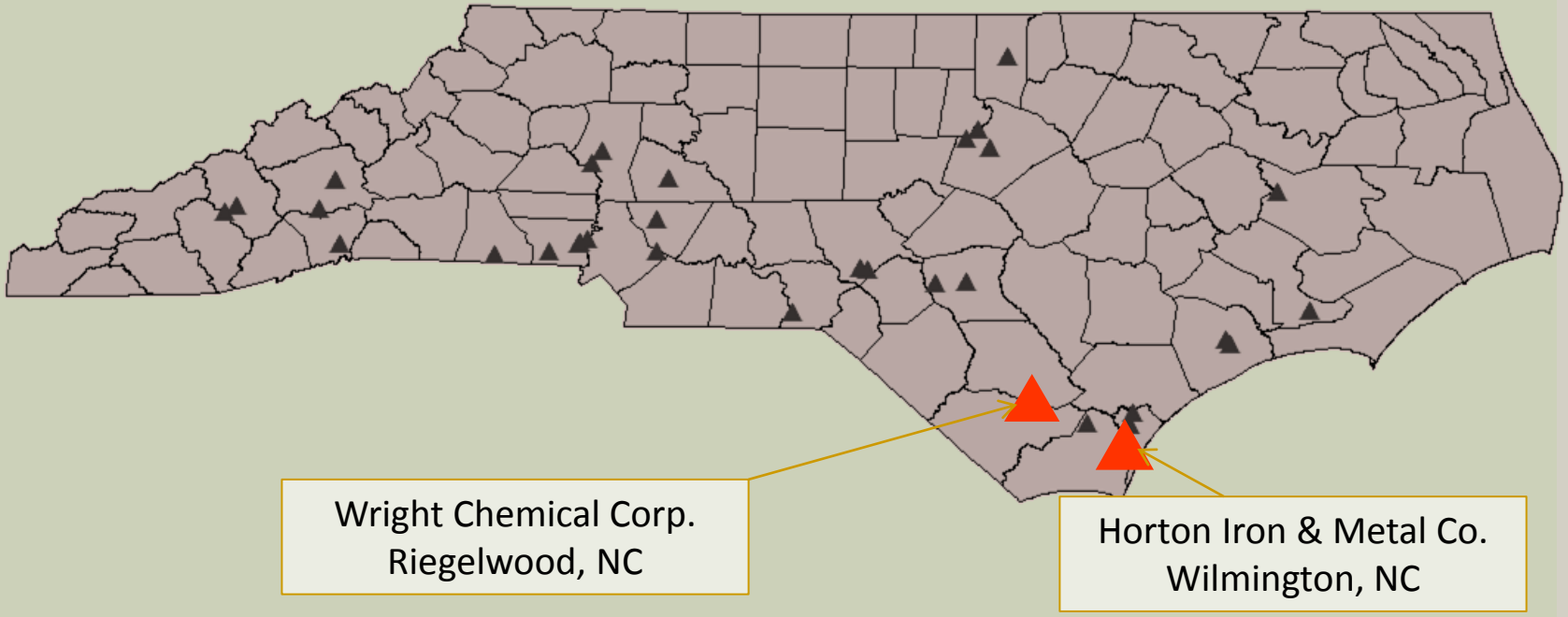
- ATSDR Public Health Assessments
  - Environmental, exposure & health effects data, **community health concerns**
- Newly listed sites with contaminants of interest to UNC SRP

Value of partnership

- Contributed new exposure information to Public Health Assessments
- Clarified community concerns, need for information
- Created opportunities for community participation
- Extended limited resources

National Priorities List sites in North Carolina

- More than 41,000 hazardous waste sites in the United States
- 1,305 sites on National Priorities List (NPL)
- 34 NPL sites in North Carolina (US EPA, 2012)
  - Horton Iron & Metal Co.
  - Wright Chemical Corp.



Wright Chemical Corp.

Riegelwood, Columbus County, NC

- Arsenic
- Lead
- Mercury
- Pesticides (DDT, dieldrin, gamma chlordane)

Horton Iron & Metal Co.

Wilmington, New Hanover County, NC

- Arsenic
- Asbestos
- Lead
- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Petroleum products

Research objectives

1. Identify the **concerns of a variety of stakeholders** and their **needs for information** related to environmental health and other risks associated with two NPL sites in eastern NC;

2. Determine **how the expressed needs may differ** based on the position of the stakeholder in the community; and

3. Generate a.) information that contributes to the development of a **plan for community engagement at each site**; and b.) recommendations for implementing the practices outlined in the ATSDR community engagement guidance.

RESEARCH DESIGN & ANALYSIS

ATSDR guidelines for selecting interviewees

	ATSDR recommendation	Columbus County	New Hanover County
Community leader	2-4	2	3
Community member	6-10	6	7
Government official	2-4	3	5
Healthcare professional	2-4	2	2
Industry representative	2-4	4	2
Total	**14-26**	**17**	**19**

Respondent and county demographics

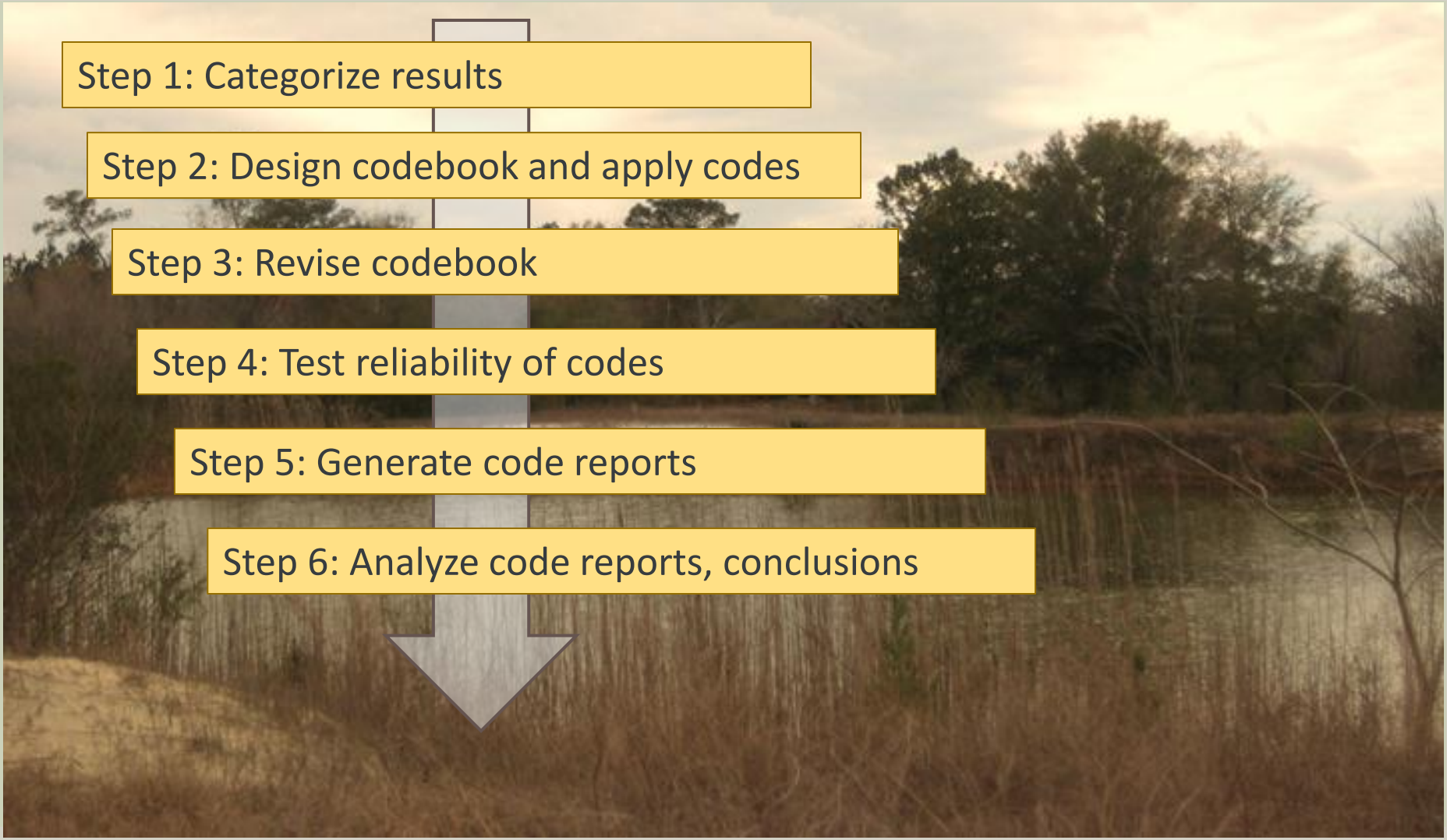
Demographic categories	Respondent demographics (median)	Columbus County (median)	New Hanover County (median)
Age	50-64	35-49	35-49
Race			
African American	15.0%	30.5%	14.8%
American Indian	5.0%	3.2%	1.2%
Other race	0.0%	4.8%	4.9%
White	80.0%	61.5%	79.1%
Education	4-year college degree	High school/GED	High school/GED
Median household income	$75-99,999	$32,283	$45,069

Study design and research methods

- Create community profiles
- Draft interviews & surveys
  - General questions
  - Site-specific questions
- Recruit participants
- Conduct interviews
- Transcribe & record data
- Analyze data, Atlas ti 6.0

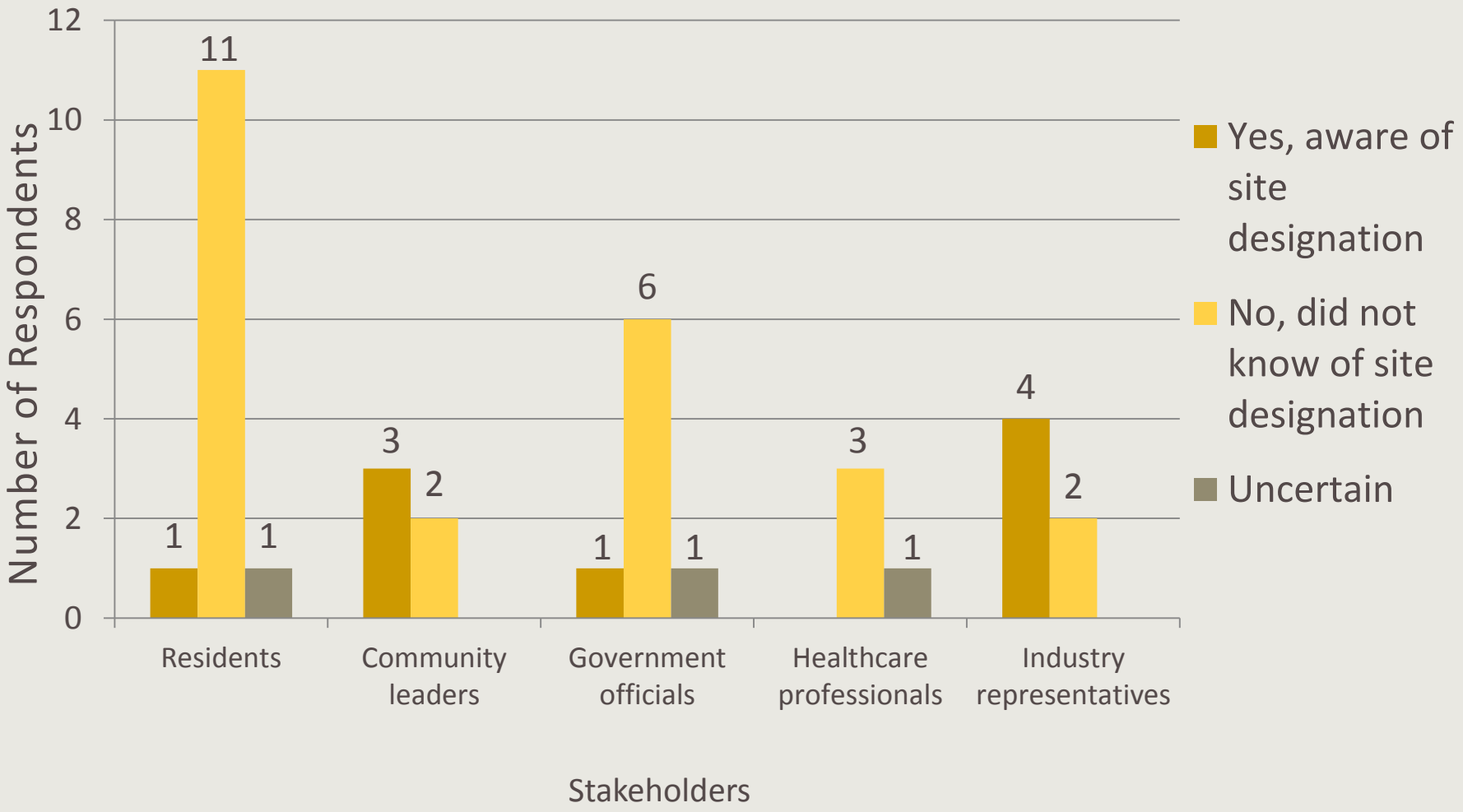
Institutional Review Board approval (11-2180)

Analytic process



DESCRIPTIVE FINDINGS

Respondent awareness of the NPL site designation



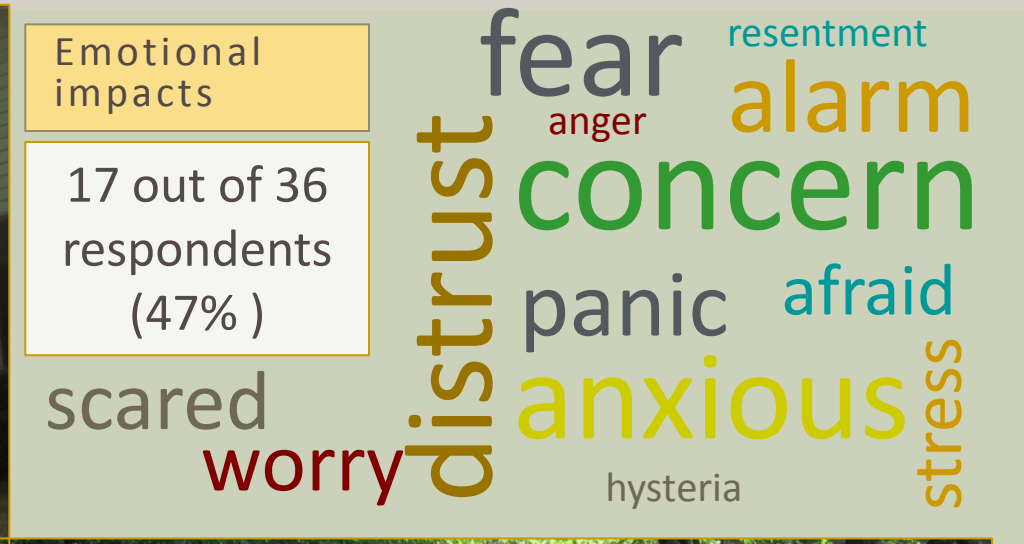
Potential impacts of the site designation

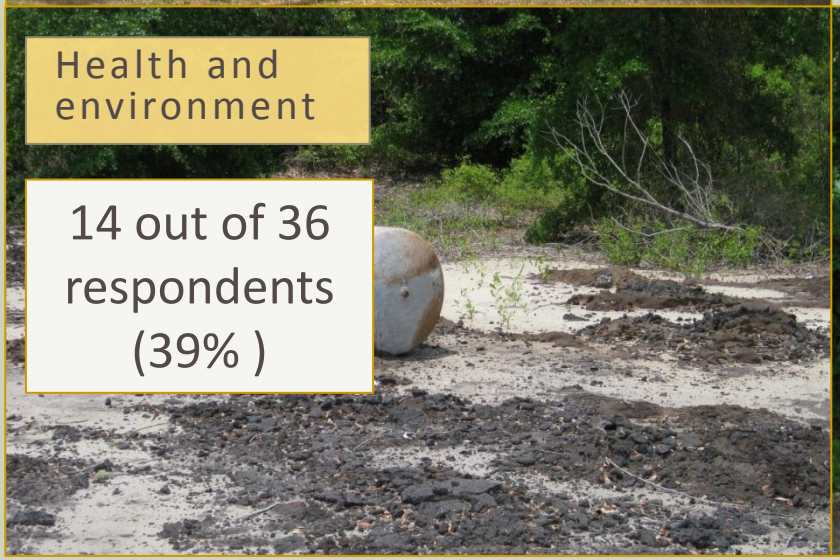
Economic impacts

17 out of 36 respondents (47%)

Emotional impacts

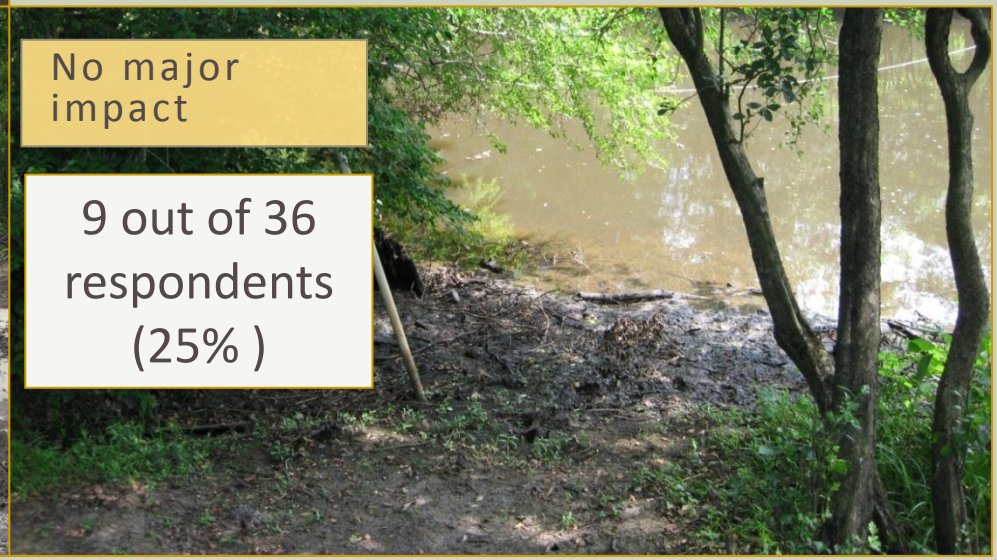
17 out of 36 respondents (47%)





Health and environment

14 out of 36 respondents (39%)



No major impact

9 out of 36 respondents (25%)

1. Fish & wildlife consumption

- 25 out of 36 respondents (70%) described fish consumption on or near the sites

"… **Basically people like us eat a lot of fish and stuff that we catch, and that's mostly where we catch all of our fish**…." (Community member)

"Yep. We're still maintaining that. As long as they're an employee here, they can join the hunting club... It's actually convenient. You get off work, and there's still a couple hours of daylight: just walk out in the woods." (Industry representative)

2. Entry to site

- 13 out of 36 respondents (36%) felt that entry to the sites was likely and/or possible

"It looks like they used to have a place to dock up against the shore so I'm sure you could get there by water." (Government official)

3. Drinking water

- 18 out of 36 respondents (50%) expressed concerns about drinking water
  - Existing concerns about groundwater quality & safety
  - Distrust of municipal water supplies

"I don't drink the water here in Riegelwood. I'm just worried about the water coming from that mill... I drink bottled water... " (Community member)

Community perceptions of risk

- Ways of knowing about risk:
  - Observable changes in the environment
  - Health outcomes in the community
    - Patterns of disease, visible signs
  - Public health advisories
- *Time as a mediator of risk*

http://www.freshwater-fishing-news.com/2010/08/how-to-skin-channel-catfish/

"That's the question; how long has Horton been on the site? **Now if Horton and Horton's employees can't have any kids and come up with a horn on their head** or something like that then Horton's got some issues going on." (Healthcare professional)

Differences in stakeholder perceptions

- Community & government stakeholders: negative health outcomes
  - Importance of site cleanup
  - Information can relieve anxiety
- Industry & healthcare: no major impacts
  - Implications of disturbing site
  - Discussion of the site can generate unnecessary concern

"I think **if the government communicates with the community, it'll maybe put trust into the government**, instead of keeping everything secret." (Community member)

NEEDS FOR INFORMATION & TARGETED OUTREACH

Information requested by communities

Information about: environmental health, exposures, land use

- Ways to reduce exposure
- Impacts to future generations
- Recreation, future land uses, property owners
- Impacts to businesses and local economy
- Technical information about groundwater

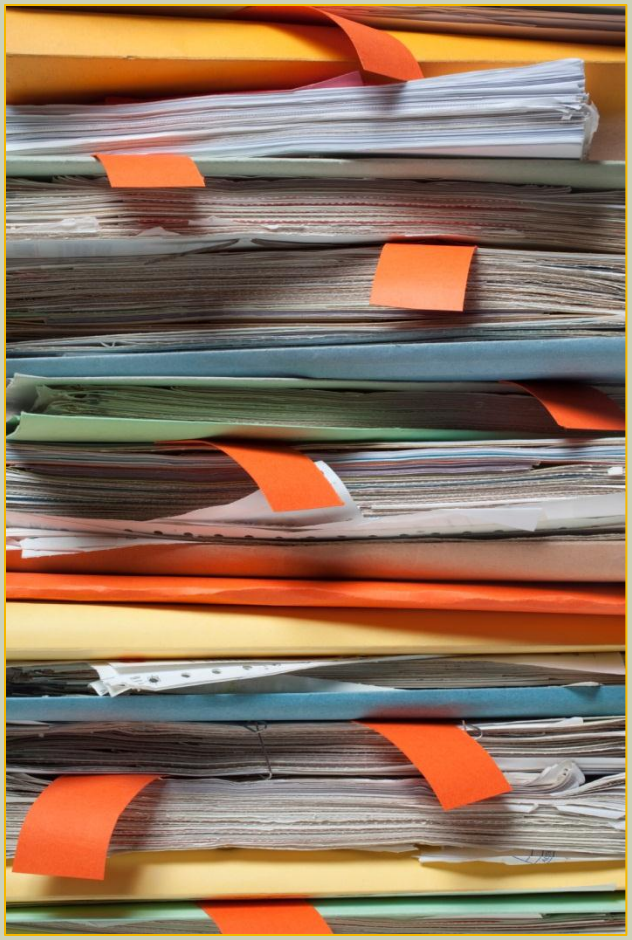
Information about: timeline and uncertainties, trust

- Discussion of **uncertainties**
- Timeline and process of site cleanup
- Other impacts to community due to cleanup
- Regular updates on site progress, including outcomes from remediation activities
- People and agencies to contact for more information

"…I believe the EPA had them clean up there, but you read about the cleanup, **but you never read about what happens after that**. You don't know if they get all the contaminants or what." (Community member)

CONCLUSIONS

Conclusions



1. Community members concerned about negative impacts on local economy and environmental health.
2. Stakeholder perceptions differed on risk and priorities related to the sites.
3. Engaging community members identified potential routes of exposure not otherwise known.
4. Future communication should address health outcomes, remediation process & timeline, and uncertainties about the site.

Acknowledgements

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- UNC Odum Institute for Social Sciences

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