

Soil & Water Contamination within Waccamaw Siouan Tribal Territory

Ashley Patrick Lomboy (Waccamaw Siouan),
Waccamaw Siouan STEM Studio Program Director (Volunteer)
Information Security Professional



Who I am.



Who we are.

What we built.





Agenda

- 1 Soul Science Project & Outcomes
- 2 Get Connected!

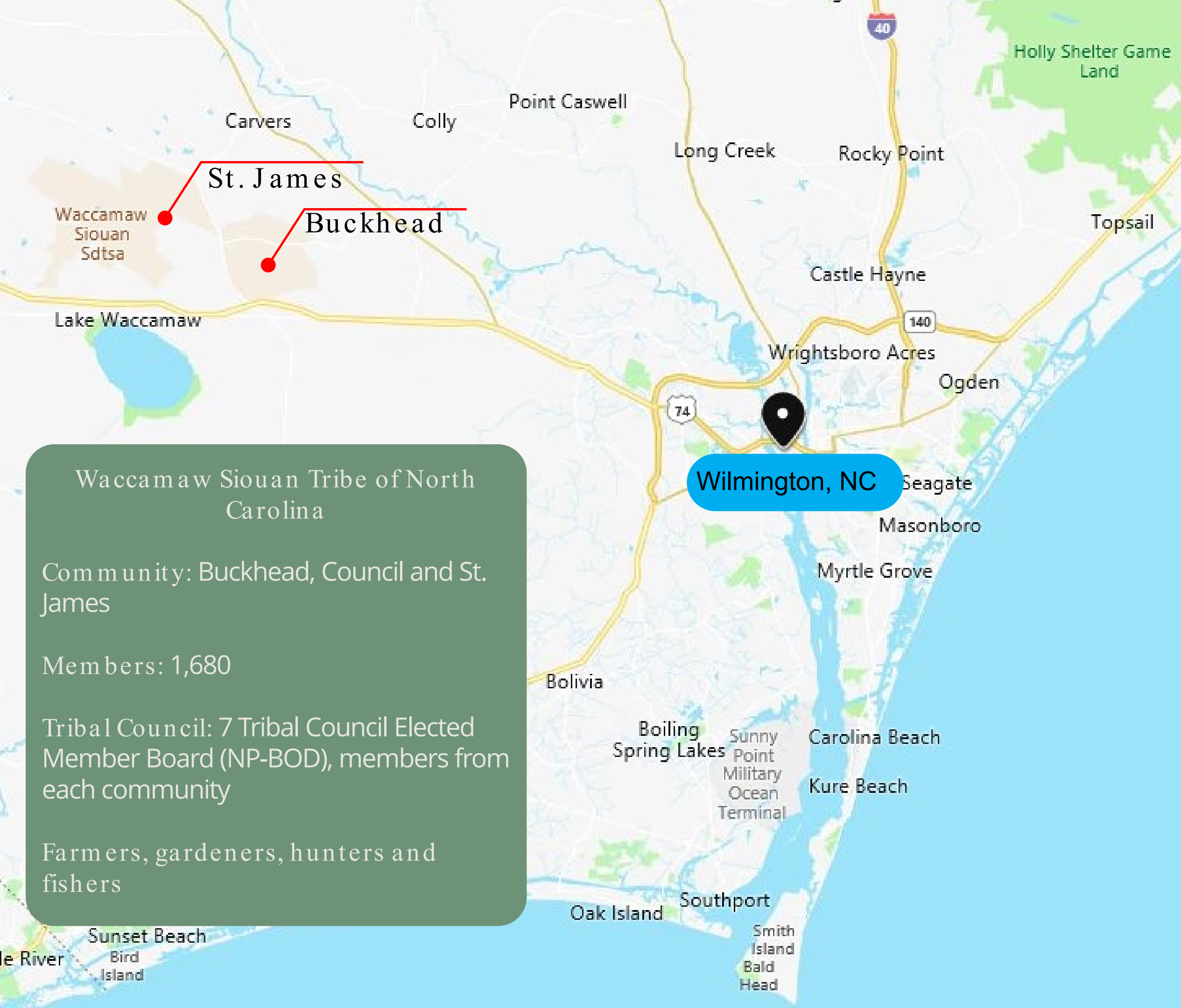
Waccamaw Siouan Tribe of North Carolina

Community: Buckhead, Council and St. James

Members: 1,680

Tribal Council: 7 Tribal Council Elected Member Board (NP-BOD), members from each community

Farmers, gardeners, hunters and fishers



[illegible]

Soul

Science

Project

Ashley Lomboy, Waccamaw Siouan STEM Studio

Maya Miller, Cape Fear River Assembly

Dr. Britt Moore, UNCW Environment Scientist

Funded by the Community Collaboration Research Grant



KENAN INSTITUTE
ENGINEERING, TECHNOLOGY & SCIENCE
NC STATE UNIVERSITY



Soul Science Project

Project Overview

Built Waccamaw Siouan Tribal Cohort of 12 youth, provided education and lab tours of UNCW, collected 103 soil samples for testing of heavy metals and PFAS with 25% Tribal Community Participation, and shared the results to the Tribal Community.

Western & Indigenous Knowledge

- Honoring Indigenous Knowledge: Types of chemicals to test for, based on oral stories from community.
- No broken promises: Community registration with every house tested, acknowledged with door hanger and signs on vehicles with a community liaison.
- Youth offered tobacco and prayed over every sample of earth collected.
- Decolonized results sharing & future actions

Results

- Heavy metals (Arsenic, Mercury, Cadmium, Selenium and Lead) resulted in well below the threshold.
 - Stories included: hog farms, shingle making, chemical companies, land underbrush control spraying, crops spraying and increased cancer diagnosis.
- PFOA (NC RSL: .038 mg/kg (38,000 ppt))
 - Soil Results: 8% had levels ranging between 361-521 ppt
- PFOS (NC RSL: .025 mg/kg (25,000 ppt))
 - Soil Results: **70% had levels ranging between 266-7,090 ppt**
 - At the time this test was performed, the recommended levels for PFAS have been set for drinking water at .004-.02 ppt in drinking water, not soil. There are no enforceable standards for PFAS levels in soil.
- We told the community the dirt could be impacting their health and encouraged community to wear mask, gloves & clean shoes.

NOTE: ppt = parts per trillion

Health Effects of PFAS: Conclusions

Sufficient evidence of an association

- Decreased antibody response (in adults and children)
- Dyslipidemia (in adults and children)
- Decreased infant and fetal growth
- Increased risk of kidney cancer (in adults)

Limited suggestive evidence of an association

- Increased risk of breast cancer (in adults)
- Increased risk of testicular cancer (in adults)
- Liver enzyme alterations (in adults and children)
- Increased risk of pregnancy-induced hypertension (gestational hypertension and preeclampsia)
- Thyroid disease and dysfunction (in adults)
- Increased risk of ulcerative colitis (in adults)

Outcome: Improved Tribal Education, Data Sovereignty, More Testing Opportunities and Pathways to Change

Protection Equipment

Water Testing

Hooheh Reforestation




Funded by: Duke Superfund





"This project was made possible through support provided by the National Fish and Wildlife Foundation and The Nature Conservancy, under the terms of Grant Agreement # 1903.23.078663. The content and opinions expressed herein are those of the author(s) and do not necessarily reflect the position or the policy of such agency or The Nature Conservancy, and no official endorsement should be inferred."





Get Connected!


 [wsstemstudio](#)

 [Waccamaw Siouan STEM Studio](#)

 [Waccamaw Siouan STEM Studio](#)

 stemstudio.waccamaw-siouan.org

 Stem@waccamaw-siouan.org
ashley@waccamaw-siouan.org

 (253) 861-4548

