Red Cliff Band of Lake Superior Chippewa Indians

- **Intro:**
  - **Who Are We?**
  - **About Me**
  - **Typical Profile/Findings (understanding your area)**
  - **Trouble Areas/Barriers**
  - **Equipment**
  - **Outreach**
  - **Indoor Air QAPP**
  - **Discussion**

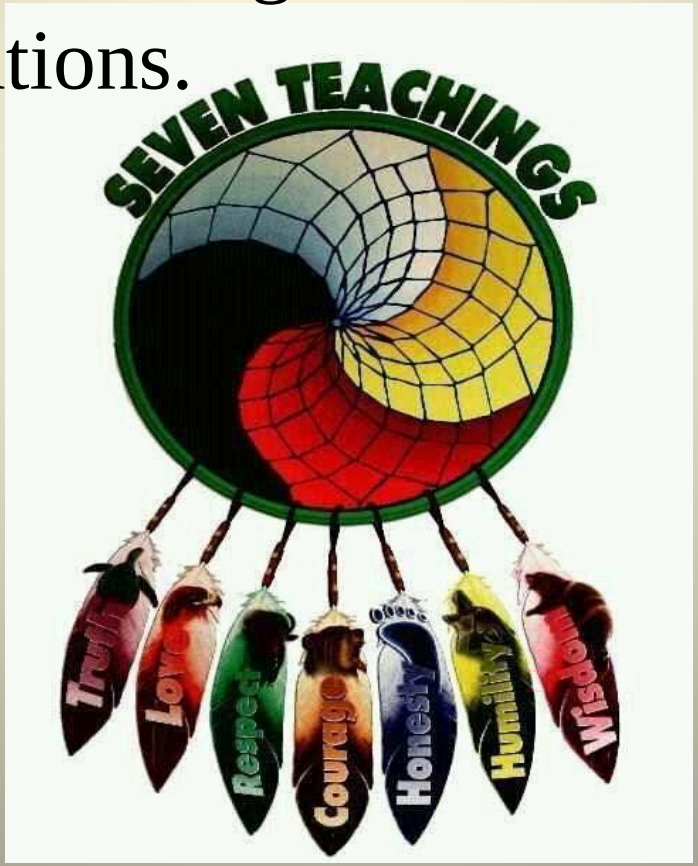
- **Who We Are:**
  - The Red Cliff Band of Lake Superior Chippewa is located on the Northernmost tip of the Bayfield peninsula in the state of Wisconsin.
  - We are surrounded on three sides by the waters of Lake Superior, which is also home to the Apostle Island's (a **22** island chain).

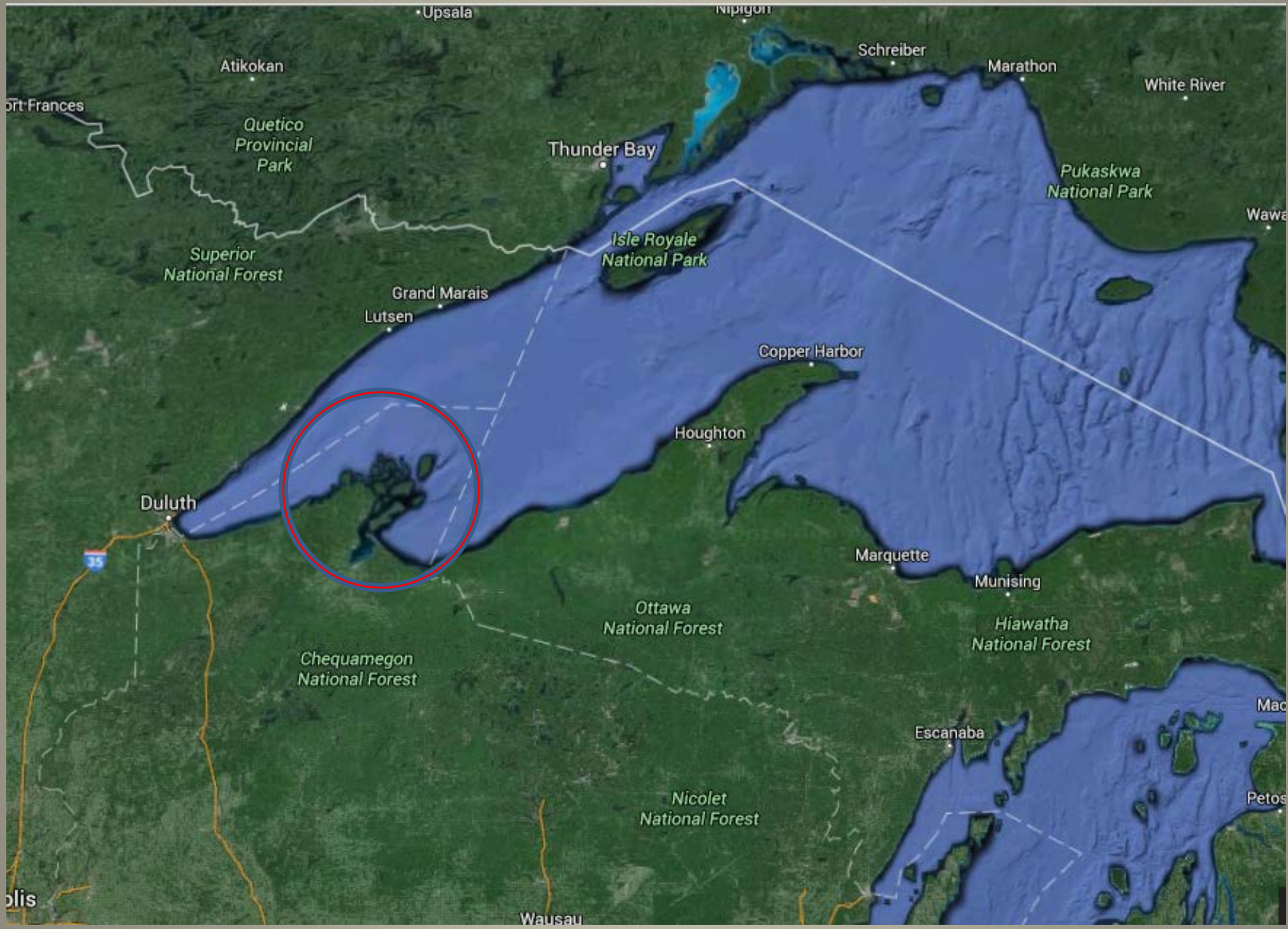
- Although there are **5,312** Red Cliff Tribal members in all, we currently have **2,513** that live “on reservation”.
- The Red Cliff Reservation totals **14,541** acres in its entirety, however there are approximately **6,220** acres listed as fee land (privately owned) within our exterior boundaries.
- Tribal services extend to include;

Law enforcement – Court system – Education

Health Care – Social Services – Housing Authority

- The Red Cliff Band is governed by a nine member council to serve our community and day to day operations, with continued efforts focused on protecting our interests/lands for future generations.




Upsala
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Schreiber
Marathon
White River
Quetico Provincial Park
Thunder Bay
Pukaskwa National Park
Superior National Forest
Isle Royale National Park
Grand Marais
Lutsen
Copper Harbor
Houghton
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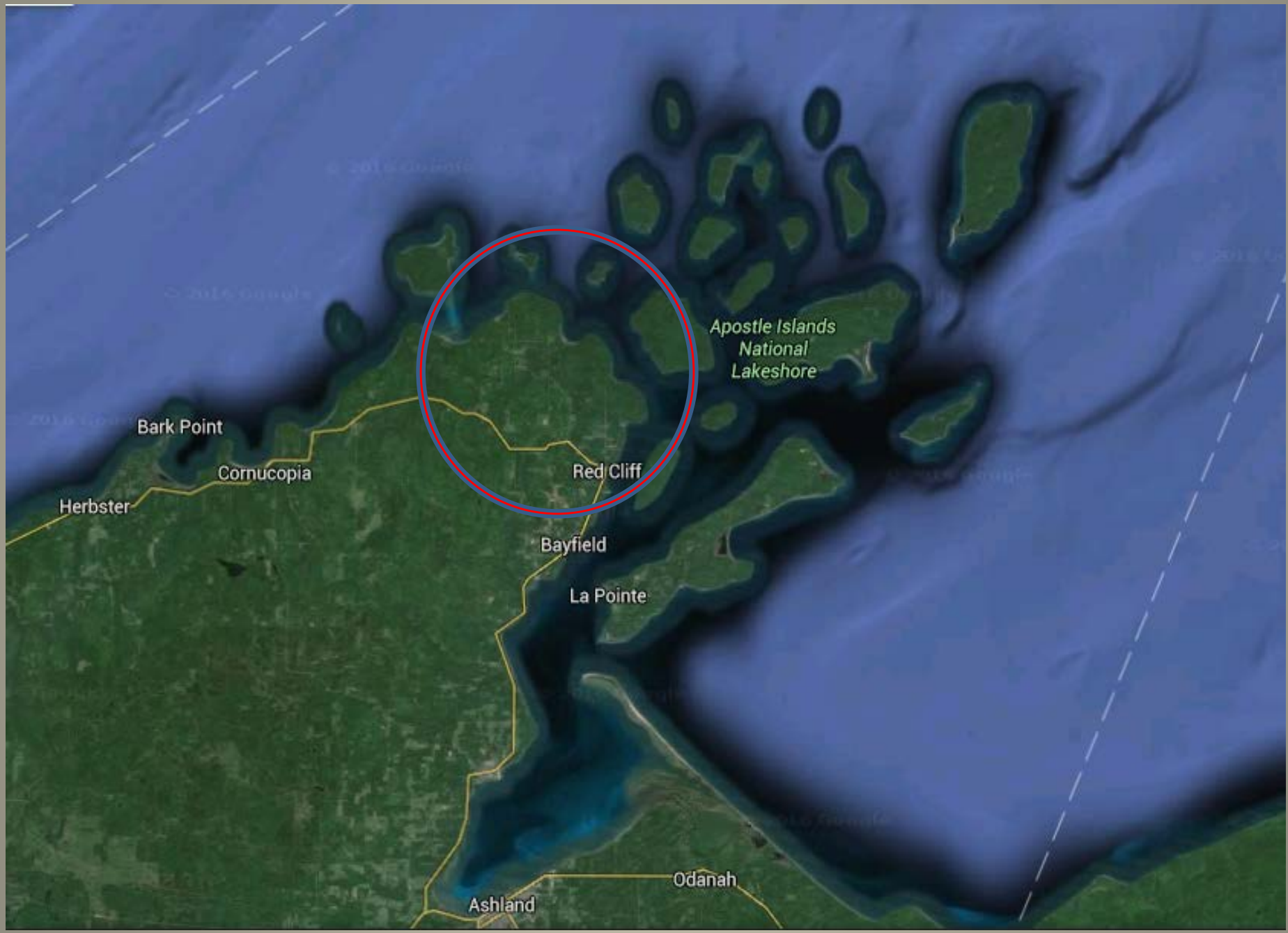
Marquette
Munising
Ottawa National Forest
Hiawatha National Forest
Chequamegon National Forest
Escanaba
Nicolet National Forest
Wausau


Apostle Islands
National
Lakeshore
Bark Point
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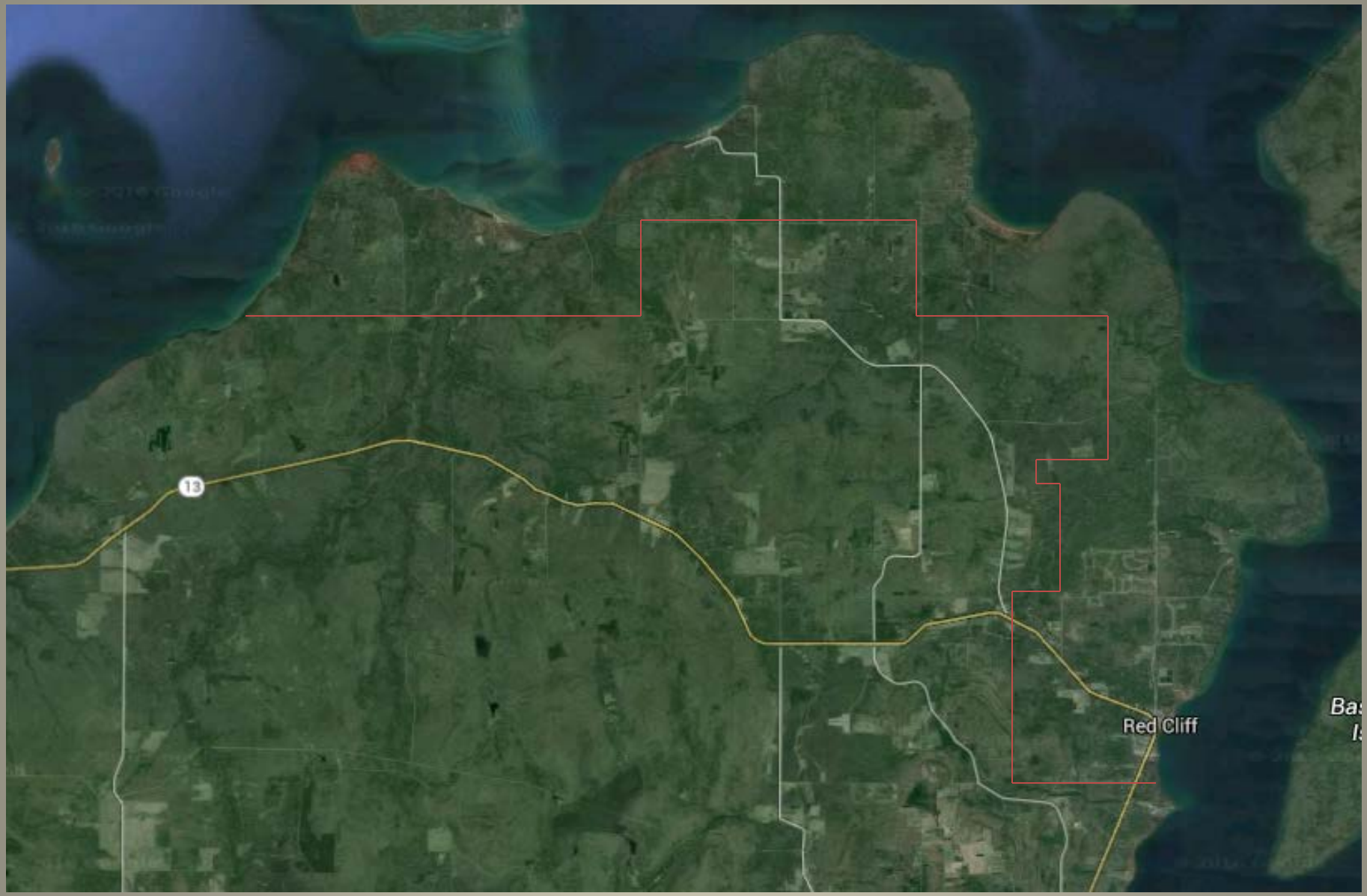
Red Cliff
Bayfield
La Pointe
Odanah
Ashland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Red Cliff

- A Little About Me:
  - I primarily come from a construction background of 25 years.
  - 8 years in managing and operating the Municipal system for the Red Cliff Tribe.
  - And about 5 years serving our country with the U.S.M.C.

- **There!!**

Now that all the boring stuff is out of the way, lets get down to what we are all here for…..

Indoor Air Quality!

Health

- Many of our tribal members suffer from varying degrees of Asthma, COPD, and upper respiratory distress.
- The Indoor Air program's main focus is to aid in locating these "triggering" mechanisms, and offer solutions to help alleviate or remediate indoor issues that can affect their overall health and comfort. Especially in our children and elders!

- **Typical Profile Findings:**

- Multiple family homes
- Mobile homes
- Construction practices
- Poor structural design

Multiple Family Homes

Due to the lack of housing, many families “double up” and share a home or housing unit. With additional occupants, you can expect adverse air quality levels to be much higher as it exceeds design capacity, especially if dwelling does not use an air exchange system (as most do not). Documenting these differences will assist you in creating a better profile in future assessments (knowing what to expect).

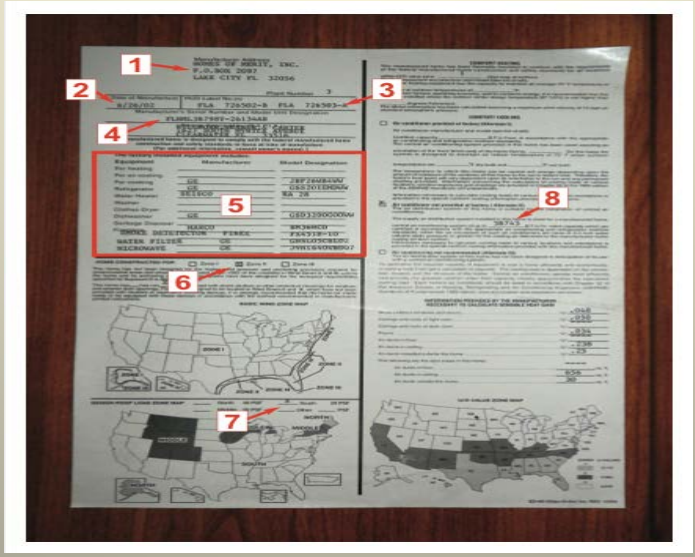
During assessments in a multiple family home, I have found Carbon Dioxide readings as high as 2700 ppm (ASHREA standard <1100 ppm), and Particulate matter counts over 2 million (Clean Room Classification is <100,000 @ 0.5 microns). This is largely due to inadequate ventilation coupled with too many occupants.

- Items To Suggest:
  - Opening windows more often.
  - Running bathroom ceiling fan for longer periods of time.

This will not “fix” the problem, but it will help in lowering air toxics and moisture levels.

- **Mobile Homes:**

Mobile homes are a dominant, affordable structure, however, while performing an assessment, be sure to look on the back side door cover to the electrical fuse box. Construction date will be listed there. Many mobile homes in Red Cliff were manufactured in the 1970's.



- Items To Note:
  - Wall thickness
  - Window type
  - Entry door seals/type
  - Roofing
  - Skirting
  - Belly pan (insulation)
  - Type of support (concrete slab, pillars, dirt, moisture barrier, etc.)

When performing an assessment on a mobile home, be sure to list as many aspects as possible.

As you get more familiar with this type of home, it will become easier to find “suspect” issues.

- FEMA trailers can be an affordable avenue, however most come from Southern climes, which are not designed for Northern winters, and are most assuredly NOT energy efficient!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FEMA

Climate/Seasons

As Red Cliff is located in the upper Northern region, seasonal consideration is a must due to extreme cold temperatures during winter. Items to consider;

– How is home heated/fuel source

- Type of heating unit used

- Type of windows and doors used

- Overall structure (construction materials, insulation, weather stripping, type of roof, etc.)

- Checking these items will help in providing a detailed assessment report.

- **Construction Practices:**

Many Tribe's utilize their Housing Authority maintenance workers for repairs, rehabilitation, and (sometimes) new construction. Do they;

  - Adhere to new construction standards/regulations?
  - Utilize current/recommended building materials in repairs or rehabilitation projects?
  - Follow guidelines regarding ventilation and/or air exchangers to fit size of structure?

Poor Structural Design

Over the years (since the 60's), several engineering firms have been used to find the "best model" for our housing needs. Some have been relatively poor, both in design for energy efficiency and in location (placement in a watershed). Make sure to note these in your assessment to get a better "overall" picture of performance. This will aid in creating a profile between the differing structures throughout your Tribe.

- Housing units dubbed “chicken coops”.

- Dilapidated trailer

- Multi Family Unit

- Rehabilitated Unit

- New Phase Unit

Trouble Areas/Barriers

Realize there are going to be issues that arise, especially if your just starting out! If you can, plan ahead!

- New housing construction
- Housing Authority
- Private homes

New Housing Construction

– If possible, attend meetings pertaining to new construction by getting on attendance lists. This way you will get notifications for pre-planning/pre-construction meetings occurring in your community. Not only will you be able to express concerns, you will put a face to your name in regards to Indoor Air Quality for future meetings.

Housing Authority

- Meet with your Housing Authorities Administrator and Maintenance Supervisor.
- Attend Housing board meetings.
- Express the need for indoor air quality assessments for their units, and how the information you provide will help them make future decisions when planning rehabilitation projects and/or new construction.
- It's not as easy as it sounds, but don't give up! It only took me a year!

Private Homes

– This area is the most frustrating, as most home owners do not have the dollars available to repair any major problems you may find. **Do not be discouraged!** You are still providing a service in documenting areas of concern, many of which can be rectified by simply opening a window to bring fresh air into their home. If your Tribe has an "assistance program", your report may just be what they need to get them help!

Equipment

Currently, the Red Cliff air program utilizes four separate pieces of equipment for performing indoor air assessments.

- **The Surveyor II** (Graywolf Sensing Solutions) which samples for;
  - CO (Carbon Monoxide in ppm)
  - CO2 (Carbon Dioxide in ppm)
  - RH% (Relative Humidity %)
  - Temperature

  (this is recalibrated annually)

– **Particle Counter model GT-321** (Met One) which samples particulate matter in size ranges of 0.3, 0.5, 1, 2, and 5 microns. This unit allows for sampling small airborne particles which can give you a good idea of how well a home is “vented”. (Clean Room Classification is suggested below <100,000 @ 0.5 microns). (recalibrated annually)

– **FLIR E8 thermal imaging camera** (FLIR technologies). This unit is used for thermal scanning of exterior walls, ceiling, crawlspace, attic. Thermal scan can detect wet or sagging insulation, air infiltration from windows, door seal, chimneys, etc. With its snapshot feature, pictures can be added to assessment reports of trouble areas, providing a visual of a potential problem.

- **Surveymaster Moisture Meter model 79450** (Forestry Suppliers Inc.) This unit is used for checking along exterior walls and plumbing areas for high moisture caused by water infiltration or plumbing leaks (anything below 12% considered “dry”). Measures in WME% (wood moisture equivalent %).

- Currently, I am working on upgrading IA equipment to include additional sensors to test for VOC’s (found in carpet glues, air fresheners, construction adhesives.), NO2 (from the incomplete burning of fossil fuels), H2S (found in older home basements due to aging/dilapidated sewer drains), and a blower door (will aid in finding air infiltration and ducting leaks).

- Graywolf Sensing Solutions ASP-IAQ-Plus. This all-inclusive unit will sample for:

CO
CO2
RH%
Temp
Dew point
VOC's
NO2

H2S
O2
PM
VoiceRecord
Camera

- The ASP-IAQ-Plus will eliminate carrying multiple units, create ease of movement in crawlspaces/attics, and from room to room (decreasing time factor).
- The voice recorder will eliminate “the clipboard” (one less thing to carry).
- Ease of downloading data by a simple plug in PC line, or by WiFi/Bluetooth.
- Create a more concise report.

- RetroTec's Model US5101 Blower Door will allow for air infiltration testing within a given structure, and will greatly improve rehabilitation projects in finding those "trouble spots".

- The Model US5101 can also be used to test for leaks in duct work, creating a much more efficient heating/cooling system, saving energy and $$$.

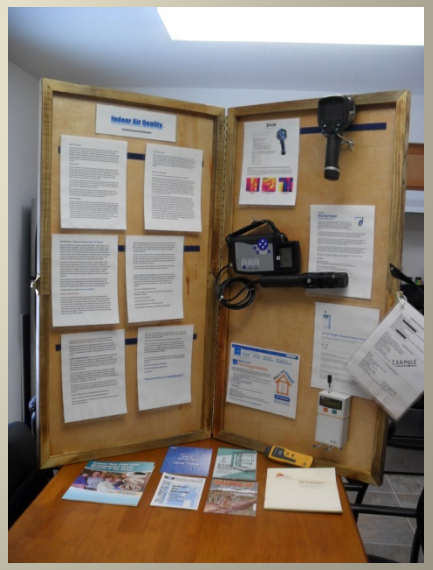
- **Outreach/Education**

– The majority of people **do not** understand that the air quality within their home can be more important that what's outside. As we spend more and more time indoors (up to 90%), we tend to forget that the "comfort" of our home/office can be a leading cause of many health issues, such as;

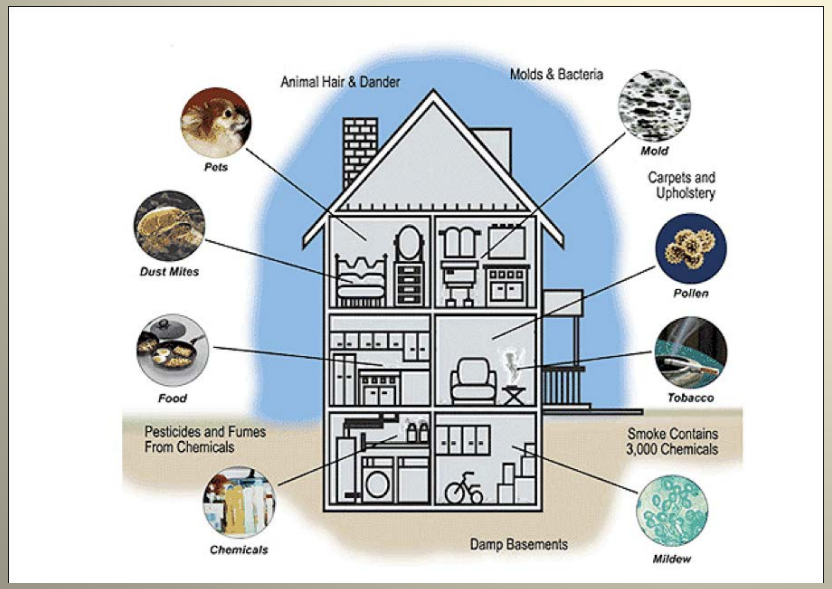
  - **Frequent asthmatic/COPD (Chronic Obstructive Pulmonary Disease) reactions**
  - **Sinus issues/headaches**
  - **Upper respiratory symptoms/discomfort**

(to name a few)

- Outreach Strategies
  - Tribal web page
  - Tribal newsletter
  - Flyers
  - Community events (display table)



I have found that leaving informational pamphlets/booklets with residents after an assessment really helps spread indoor air information, as “word of mouth” carries more weight than a flyer. Many of these items can be acquired through your regional EPA office.



- **Indoor Air Quality Assurance Project Plan**

IA QAPP

Developing one of these is as about as much fun as a heart attack, but it can be done!

- In creating your QAPP, you'll want to include the following:
  - Information about your Tribe
  - What it is you plan to do
  - How your going to go about doing it
  - How your going to complete it
  - Equipment you plan to use
  - Recording your data, and
  - What quality assurance/quality control measures you will use

- **Simple……right???**

NOT!

- For those of you with an indoor air program already in place, updating an old QAPP isn’t too frustrating as the basics are already in place.

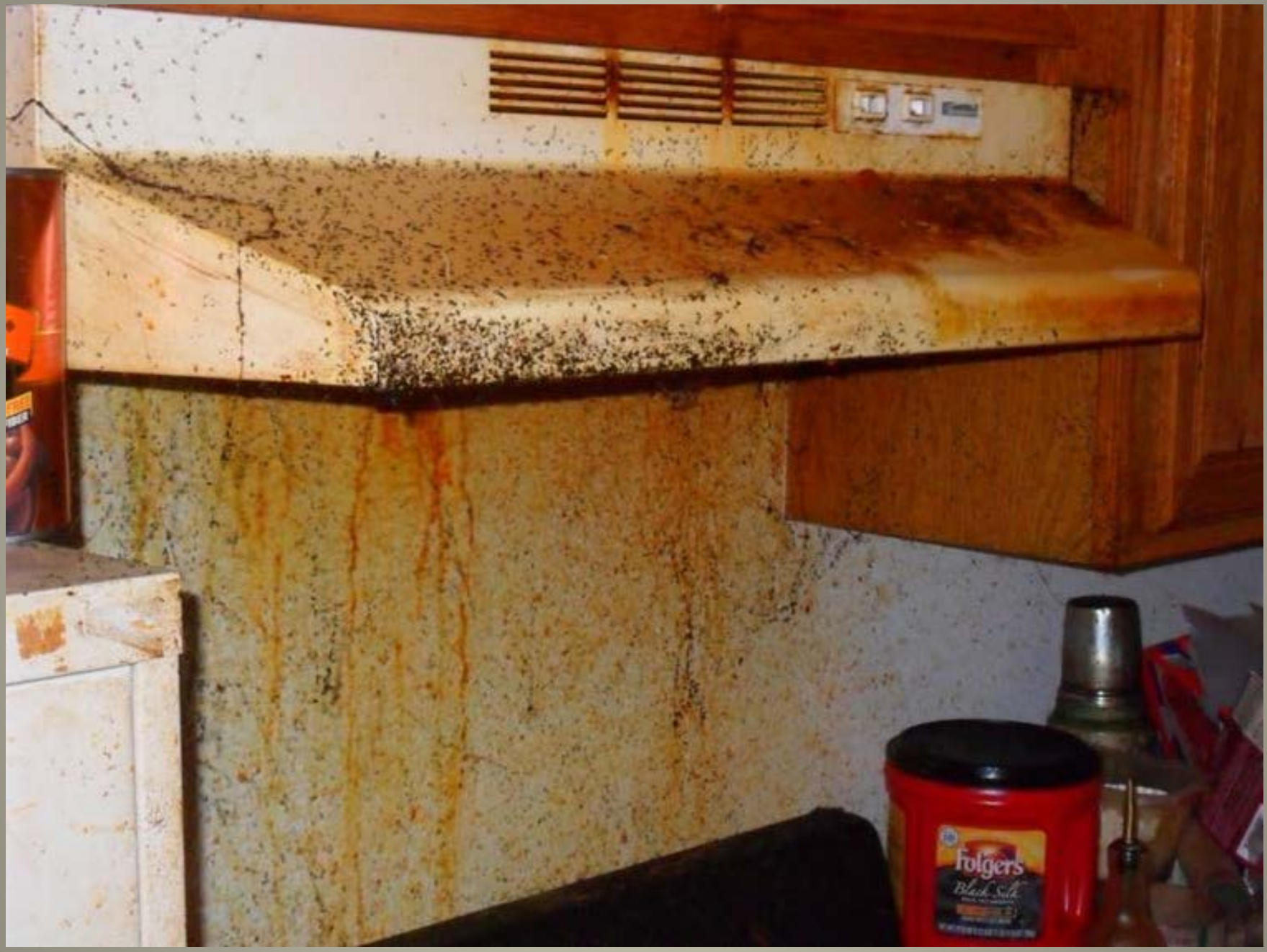
- For those of you just starting out, it can get downright agitating! There are some templates out there which you can find on the EPA site (**epa.gov** then search **region 3 quality assurance project plan template**),
- or through Northern Arizona University's **"Turbo QAPP"** download (email **Malinda.Ronca-Battista@nau.edu**), and she will assist in getting what you need.

- **however**, getting an old QAPP from another Tribe to use as your guide would actually be most beneficial as much of what you <u>really</u> need in your QAPP will be mapped out for you.

- Then go through it, plug in your information, make the necessary changes to reflect your goals, do a little fine tuning, and your off to the races!

- **A little side bar info…..**

- Keep in mind while performing an assessment, you are not there to pass judgement, you are there to document what may be causing a health issue in a given home.
- Many times you will find that "good housekeeping" practices will alleviate most problems.
- So…..be professional AND prepared for what you may find!! (not always good ☹)


Folgers
Black Silk


folgers


VEGETABLE OIL
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Coca-Cola

- **Discussion?**