# Taholah Relocation Integrated Energy System

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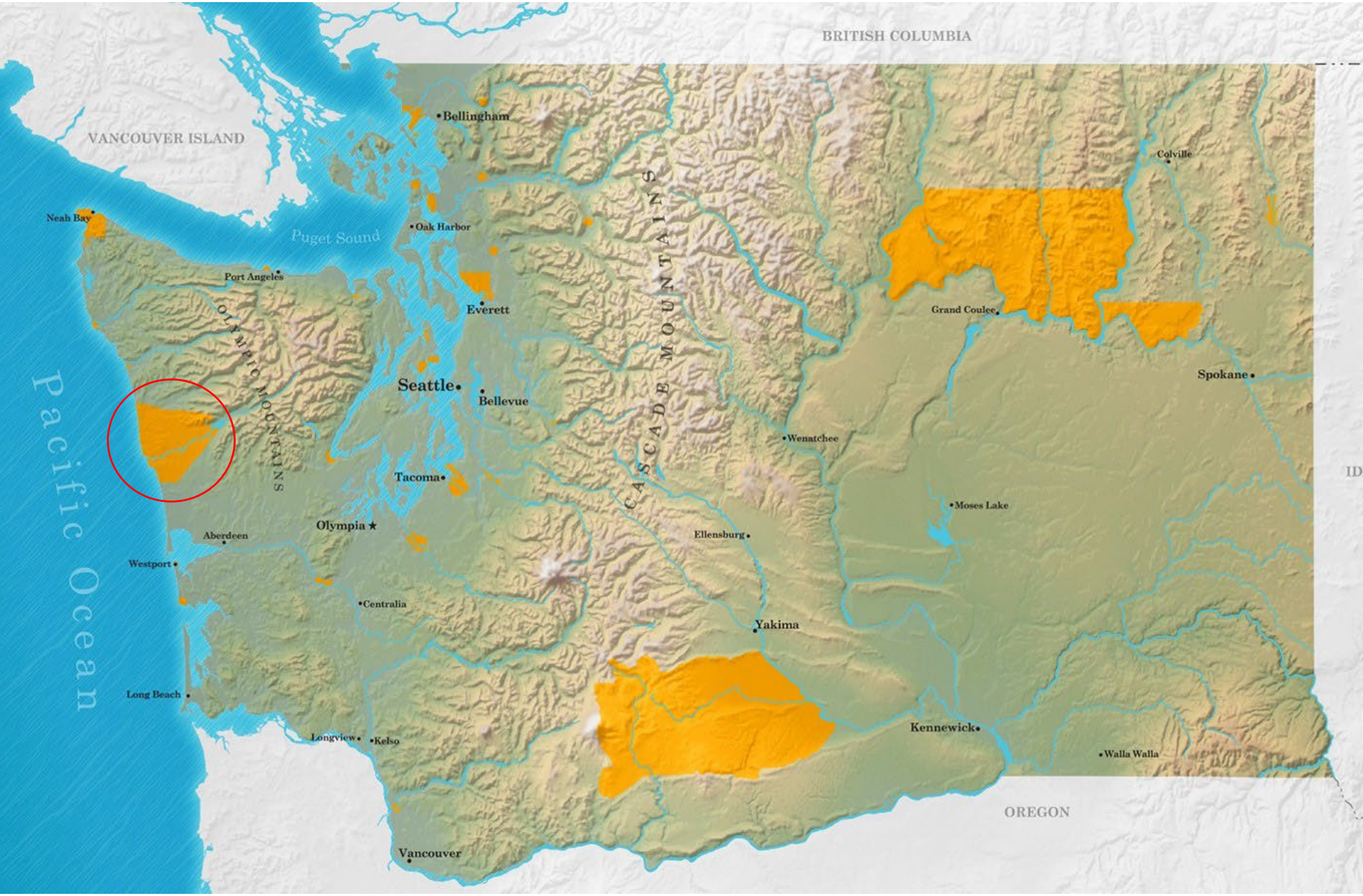
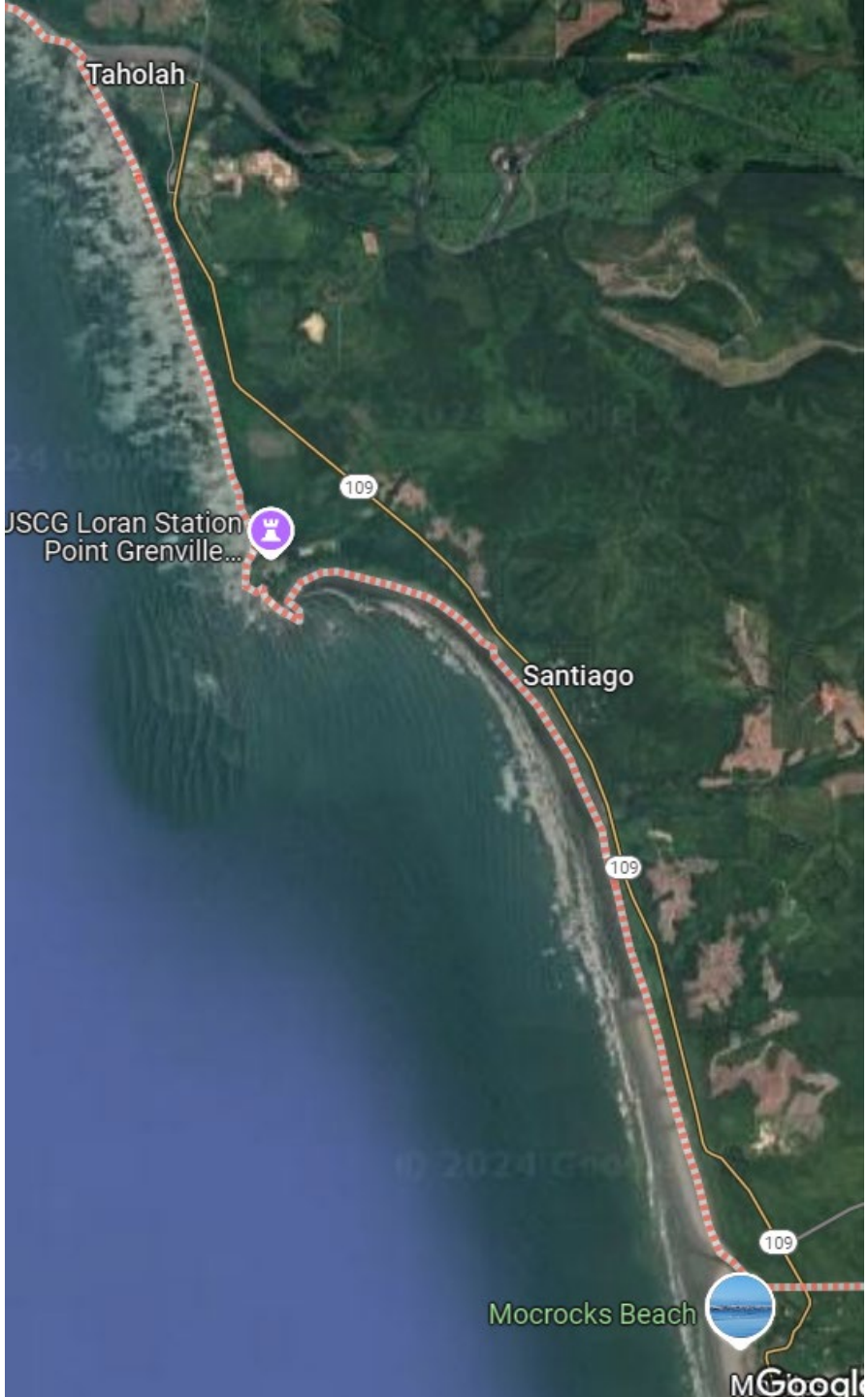
Senior Planner

Quinault Indian Nation


BRITISH COLUMBIA
VANCOUVER ISLAND
Bellingham
Colville
Neah Bay
Puget Sound
Oak Harbor
Port Angeles
Everett
CASCADE MOUNTAINS
OLYMPIC MOUNTAINS
Grand Coulee
Spokane
Seattle
Bellevue
Wenatchee
Tacoma
Moses Lake
Olympia ★
Aberdeen
Ellensburg
Westport
Centralia
Yakima
Pacific Ocean
Long Beach
Longview
Kelso
Kennewick
Walla Walla
OREGON
Vancouver

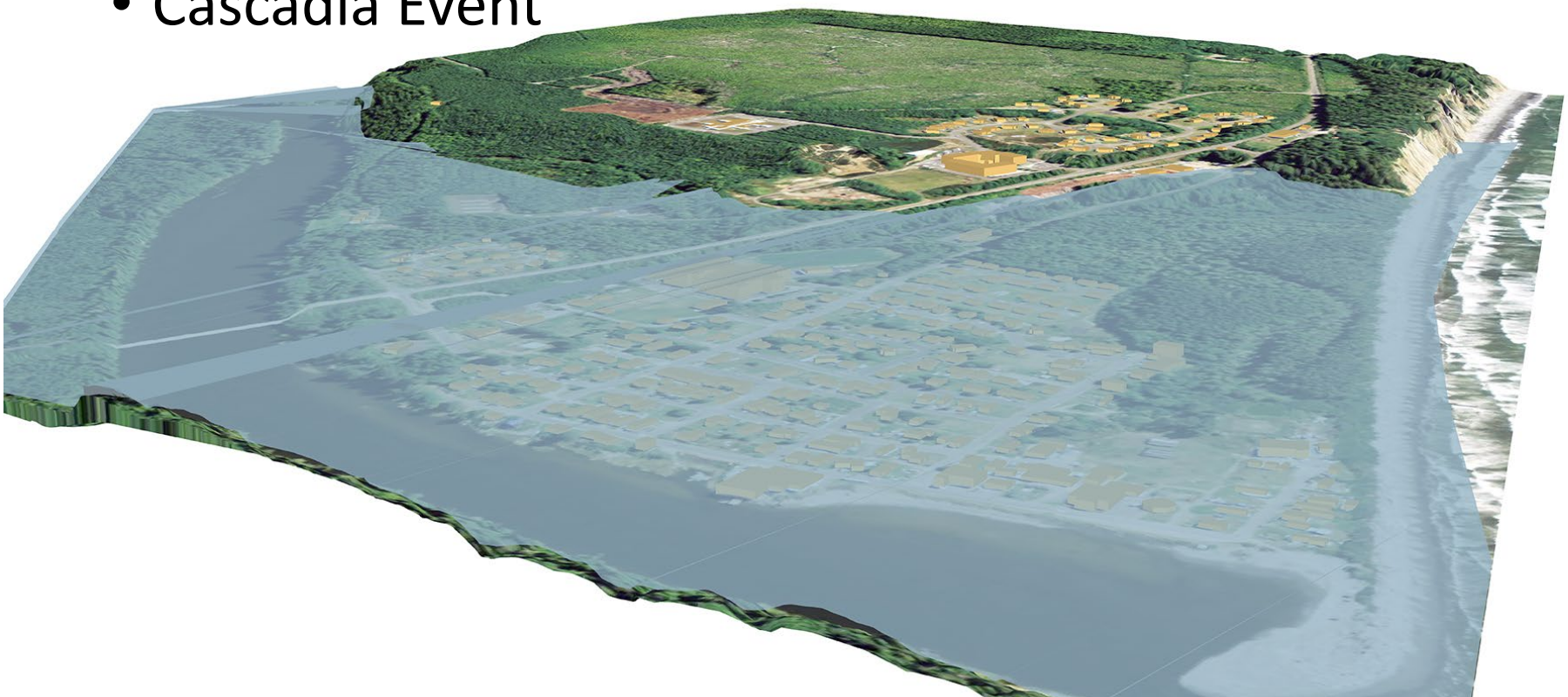
# Quinault Indian Nation

- The Quinault Indian Nation (QIN) consists of the Quinault and Queets tribes and descendants of five other coastal tribes: Quileute, Hoh, Chehalis, Chinook, and Cowlitz.
- Approximately 4,000 members. Village of Taholah has a population of approximately 800
- Signatories of the Quinault River Treaty, 1855

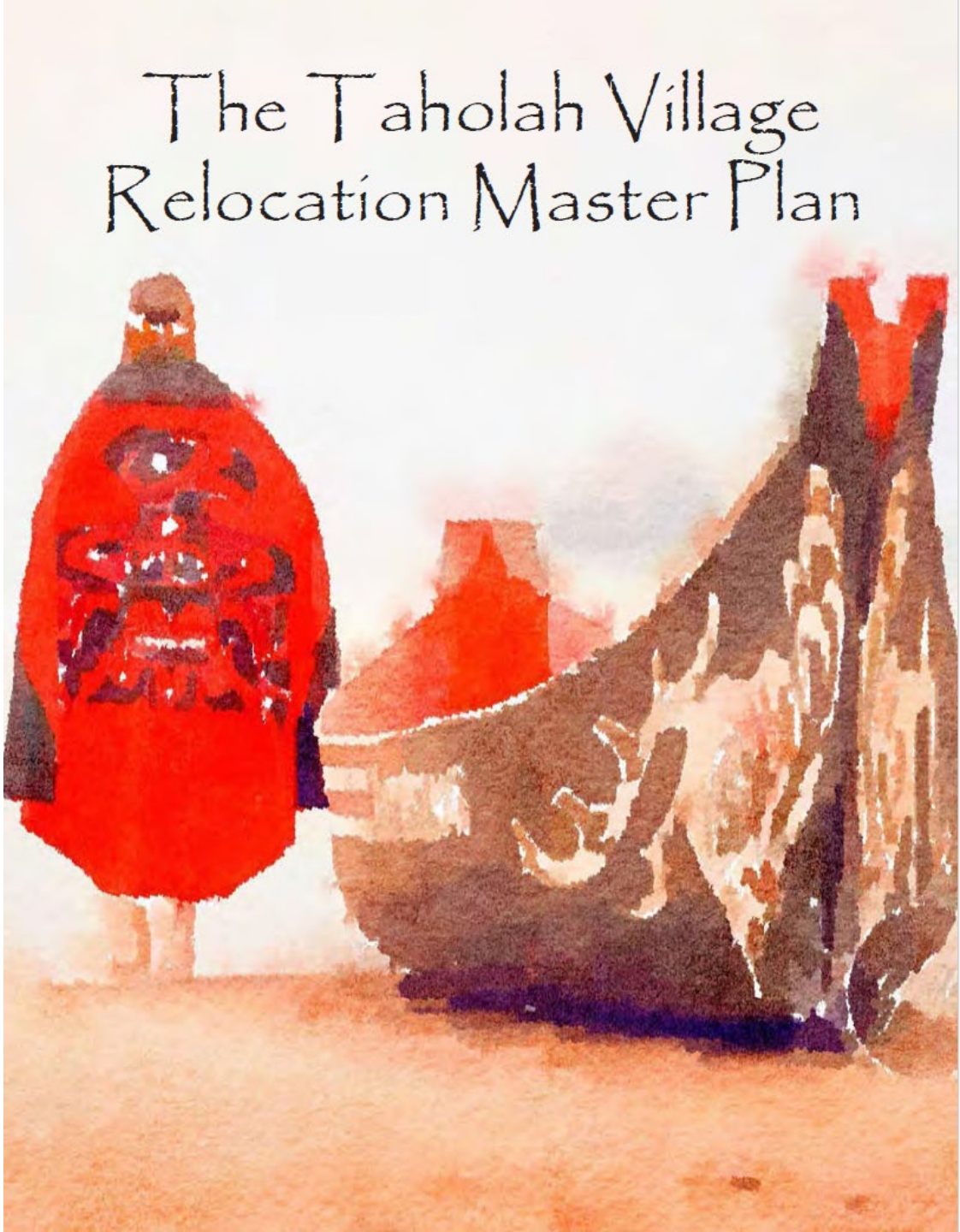

Taholah
109
USCG Loran Station
Point Grenville...
Santiago
109
109
Mocrocks Beach

# Threats

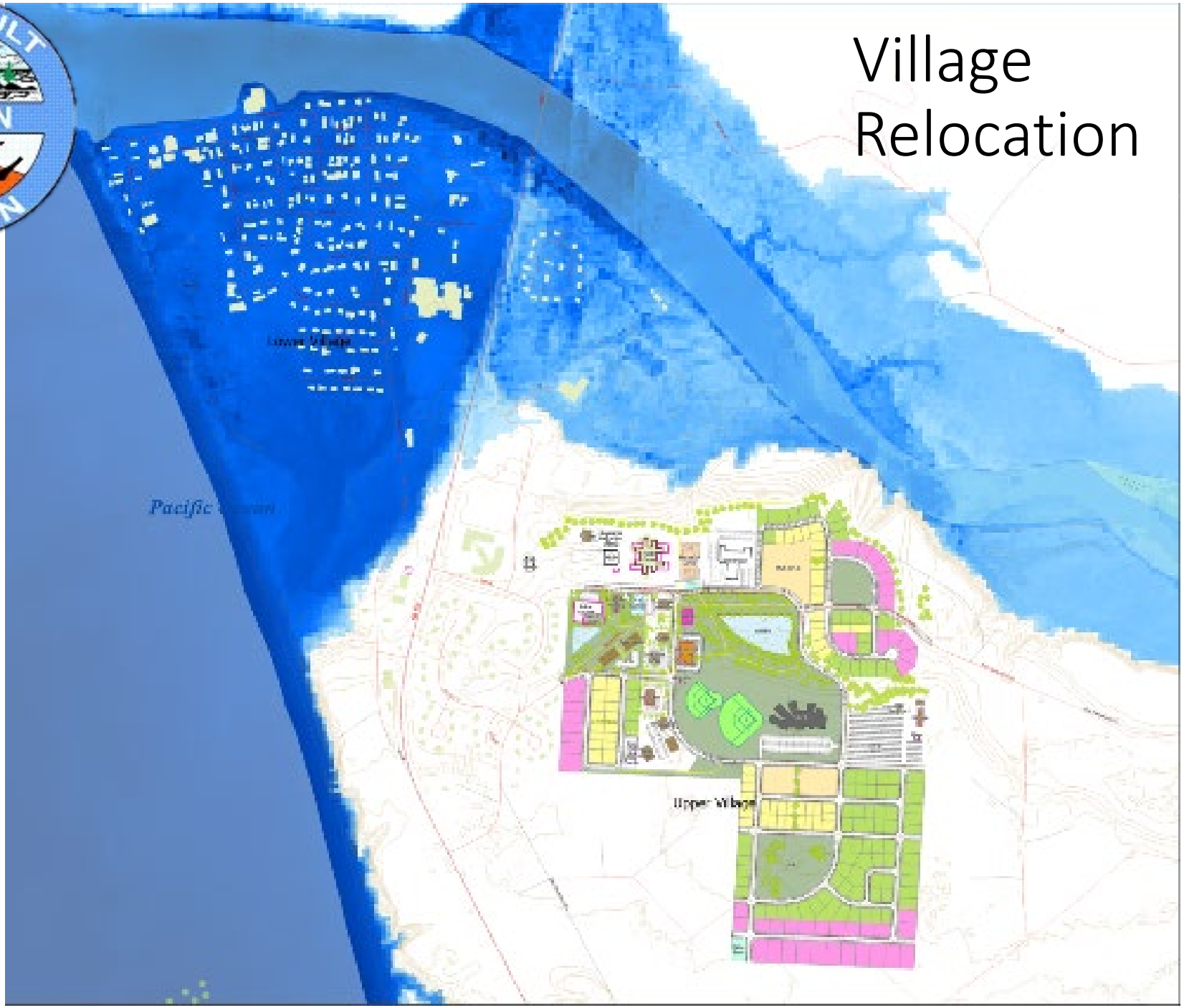
- Tsunamis/Earthquakes
- Sea Level Rise
- Cascadia Event

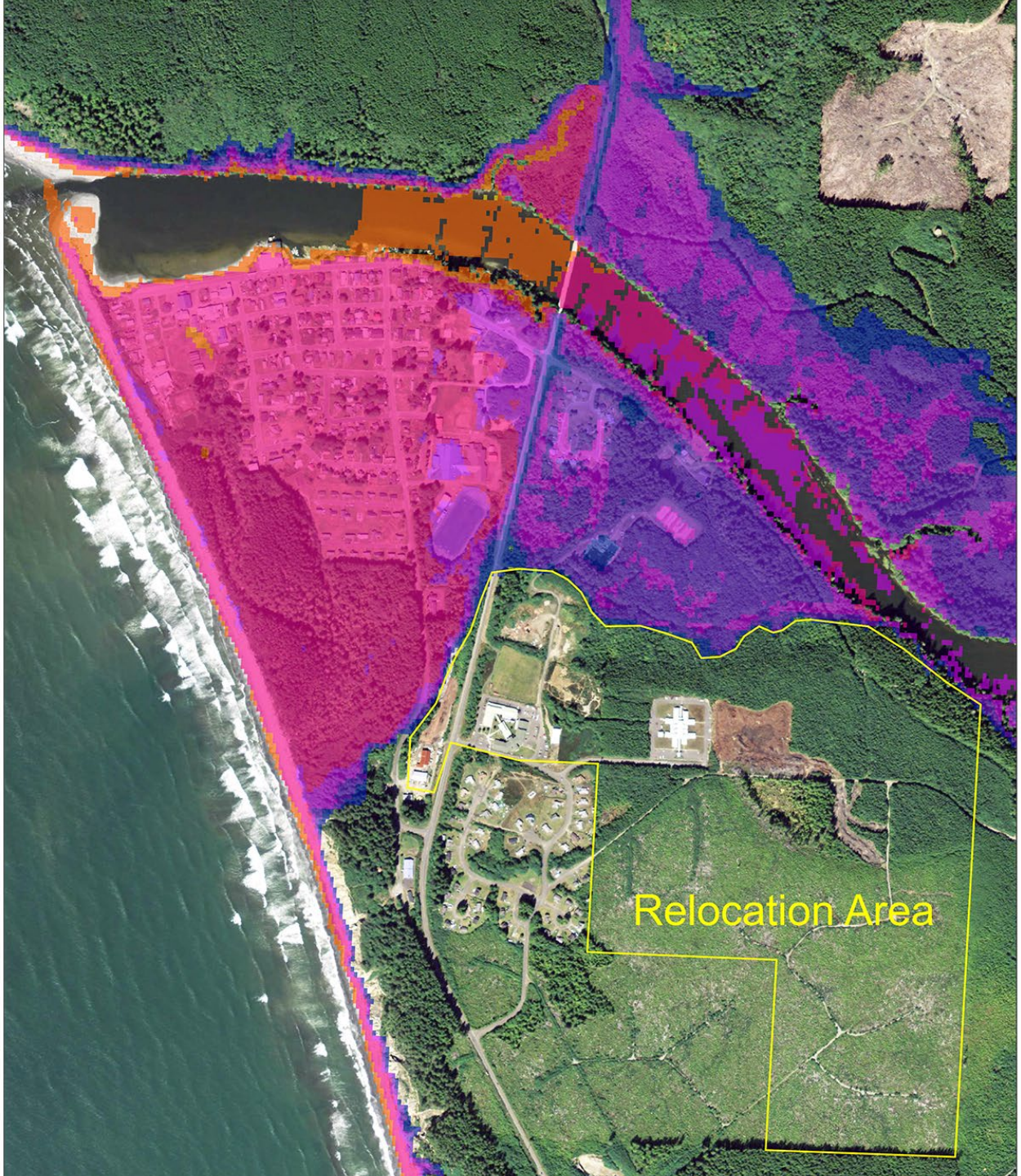


- Adopted in 2018
- 134 pages
- Outlines relocating the lower Taholah Village out of the flood zone



# Village Relocation




Relocation Area

# But Why Do We Need Energy Sovereignty?

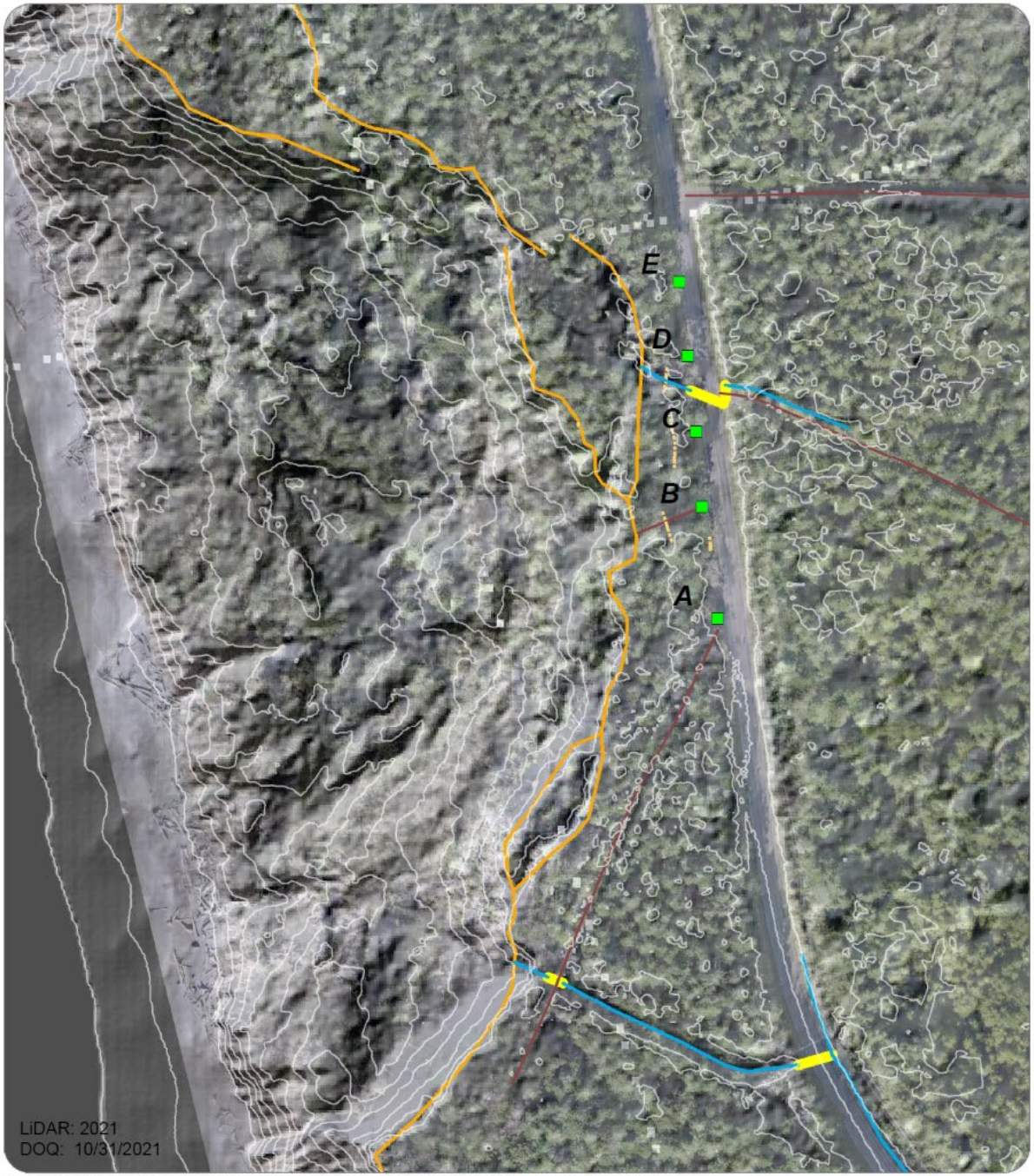



**FIGURE 1**
Observational Monitoring Points

# Objectives

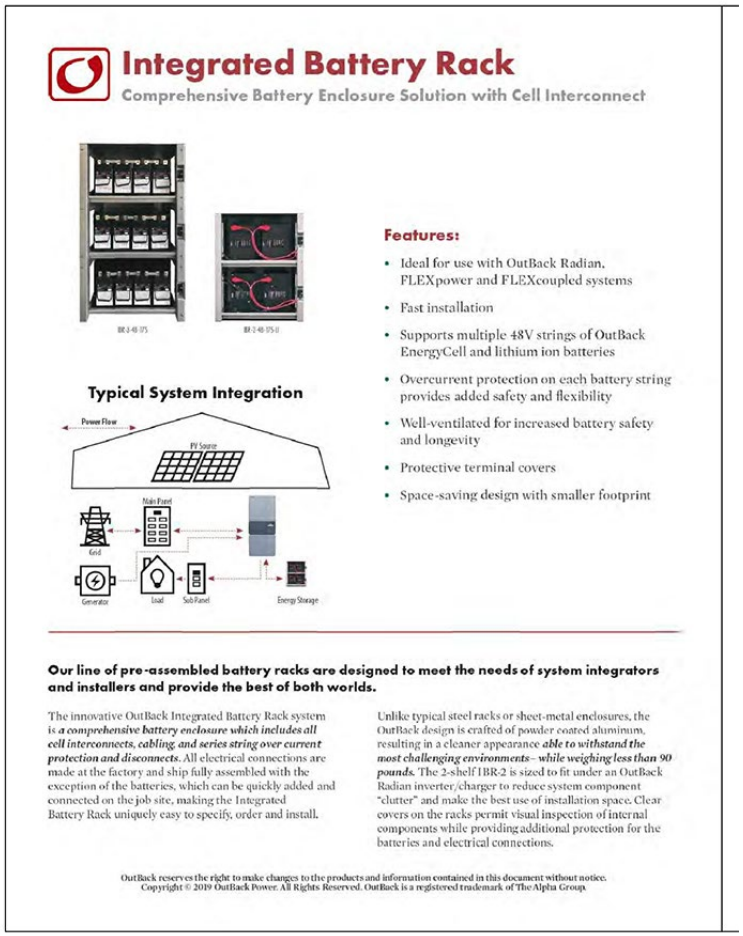
- Support identified critical electrical loads of Taholah Generations Building
- Produce an estimated 119,100 kWh/year
- Provide an estimated $243,393 in energy savings over 25 years
- Deliver workforce development training workshop promoting tribal member opportunities to join the renewable energy workforce
- Implement an energy monitory dashboard
- Minimize carbon emissions form the use of diesel generators

# Taholah Generations Building

- Daycare
- Head Start
- Seniors Center
- Emergency Shelter

# 99kW system w/ battery backup

- BIA, Indian Energy Grant for design & microgrid study
- DOE grant to fund construction ($200k, plus match)
- Back up of some life safety systems for Generations Building (refrigeration, lights, exit signs)
- Supply power to the grid



## Integrated Battery Rack

Comprehensive Battery Enclosure Solution with Cell Interconnect

**Features:**

- Ideal for use with OutBack Radian, FLEXpower and FLEXcoupled systems
- Fast installation
- Supports multiple 48V strings of OutBack EnergyCell and lithium ion batteries
- Overcurrent protection on each battery string provides added safety and flexibility
- Well-ventilated for increased battery safety and longevity
- Protective terminal covers
- Space-saving design with smaller footprint

**Typical System Integration**

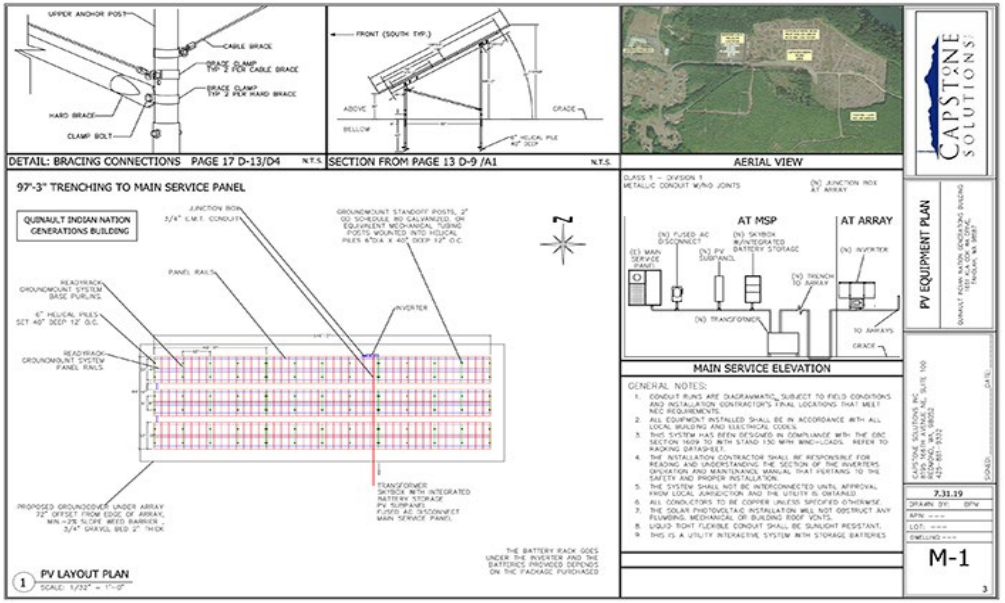
Power Flow
PV Source
Main Panel
Grid
Generator
Load
Sub Panel
Energy Storage

**Our line of pre-assembled battery racks are designed to meet the needs of system integrators and installers and provide the best of both worlds.**

The innovative OutBack Integrated Battery Rack system is ***a comprehensive battery enclosure which includes all cell interconnects, cabling, and series string over current protection and disconnects.*** All electrical connections are made at the factory and ship fully assembled with the exception of the batteries, which can be quickly added and connected on the job site, making the Integrated Battery Rack uniquely easy to specify, order and install.

Unlike typical steel racks or sheet-metal enclosures, the OutBack design is crafted of powder coated aluminum, resulting in a cleaner appearance ***able to withstand the most challenging environments– while weighing less than 90 pounds.*** The 2-shelf IBR-2 is sized to fit under an OutBack Radian inverter/charger to reduce system component "clutter" and make the best use of installation space. Clear covers on the racks permit visual inspection of internal components while providing additional protection for the batteries and electrical connections.





DETAIL: BRACING CONNECTIONS PAGE 17 D-13/D4 N.T.S.

SECTION FROM PAGE 13 D-9 /A1 N.T.S.

AERIAL VIEW

97'-3" TRENCHING TO MAIN SERVICE PANEL

QUINAULT INDIAN NATION GENERATIONS BUILDING

1 PV LAYOUT PLAN

AT MSP

AT ARRAY

MAIN SERVICE ELEVATION

GENERAL NOTES:

CAPSTONE SOLUTIONS

PV EQUIPMENT PLAN

7.31.19

M-1

# 99kW system w/ battery backup

- Elemental Energy has been selected as a contractor for the project
  - Complications with procurement requirements delayed executing the contract, but as of meeting it has signatures.
  - Upon contract execution first deliverables are available
  - Elemental will design and install a 99 kw solar system on the generations building
  - They will also evaluate options for battery back-up


- Red Cloud has been selected for the educational and work-force component
  - Will have an online class to discuss design methodology
  - Will be a 3 day onsite training
- Bonneville Environmental has supplied funding for the educational/work-force development component

# Lessons Learn… so far…

- Staff turn over
- Ground vs roof mount
- Staff opinions on diesel vs solar
- COMMUNICATION!

# Siokwil (Thank You)

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