



**Tolowa
Dee-ni'
Nation**

Renewable Solar Energy at Rowdy Creek Fish Hatchery

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About the Tolowa Dee-ni'

Waa-saa-ghitlh-'a~ Wee-ni Naa-ch'aa-ghitlh-ni (Our Heritage is Why We Are Strong)

- The Tolowa Dee-ni' Nation is a federally recognized Indian Tribe of Tolowa Indians.
- The Nation is located 3 miles south of the Oregon-California border in Northwest California.
- The Tribe's general membership consists of 1,700+ members governed by a 7 member Tribal Council elected by the general membership.
- Tribal operations are managed by the Administration Staff. Other departments include; Fiscal, Natural Resources, Housing, Culture, Native American Graves and Repatriation, Office of Self Governance, Tribal Heritage Preservation Office, Community and Family Services, Grants and Contracts, Public Works and Facilities, Human Resources, Planning, Information Technology, Enrollment and Clerical Support.
- Tolowa Dee-ni' Nation property holdings include a drinking water system, Rowdy Creek Fish Hatchery, Tribal Administrative Offices, Gaming Agency Offices, Senior Apartments, Howonquet Cemetery, Prince Island, UIHS Medical/Dental Clinic, Xaa-wan'-k'wvt (Howonquet) Early Learning Program and the Xaa-wan'-k'wvt (Howonquet) Hall Community Center. Other lands are reserved for future use.
- Enterprise holdings include: Lucky 7 casino, Lucky 7 Fuel Mart Howonquet Lodge, Xaa-wan'-k'wvt Village and Resort and Xaa-wan'-k'wvt (Howonquet) Early Learning Program.

Tolowa Dee-ni' Nation Ancestral Territory



Tolowa Dee-ni' Nation Reservation

OREGON
CALIFORNIA

- Ancestral Territory Rivers
- Interstate 5
- State Route 199
- State Highway 101
- TDN Ancestral Territory
- California-Oregon State Line



Map created by the Tolowa Dee-ni' Nation GIS Department and is for reference use only. Not to be reproduced without permission from the Tolowa Dee-ni' Nation

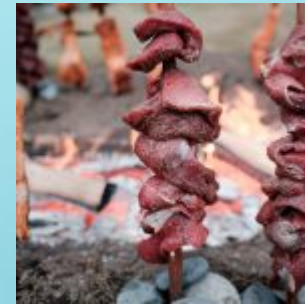
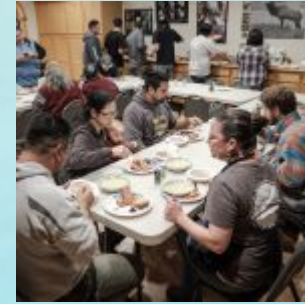
Coordinate System: GCS North American 1983
Datum: North American 1983 Date: 6/2/2017

0 5 10 20 30 40 Miles

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Tribal Subsistence

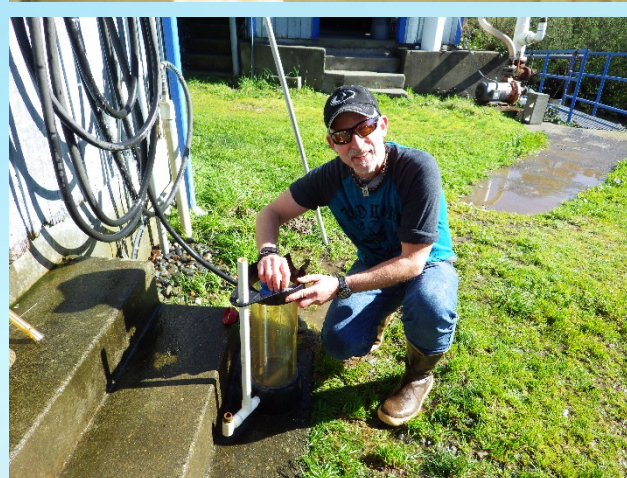


Project Overview

- The Rowdy Creek Fish Hatchery owned by Tolowa Dee-ni' Nation has an average electric operating expense of \$3000.00/ month.
 - The service from Pacific Power is divided among several meters on the property that service the Fish Hatchery. Most of the meters are fed from a main 400 amp drop at the power shed where the large generator is housed. After reviewing the site and logistics it was recommended to install a 113.4KW system in an effort to offset the \$3000.00/month utility bill.
- The recommended system will offset 75-80% of the hatcheries annual electrical expenses.
- The system will consist of several large ground mounted solar arrays installed on the hatchery property as well as utilizing the existing roof space of the storage building.
- The designed the system to maximize the solar potential for the site while not hindering hatchery operations.
- The system will require engineering and soil tests, considerable landscaping and grading including removal of several trees on the south side of the property.
- Total Projected cost between \$3.45-3.55/ watt installed = \$396,900.00 @ \$3.50 watt installed.
 - The 113.4KW system recommended will pay for itself in 13 years. At year 13 the system will begin to provide positive cash flow in the form of saving on annual utility operating expenses.

Progress to Date

- Currently in pre-award negotiation process with DOE
 - Biological Assessment Completed
 - Elevation Certificate Submitted
 - Contractor getting under contract
 - Collection of bids for equipment



Project Location

- Rowdy Creek Fish Hatchery
– Smith River CA



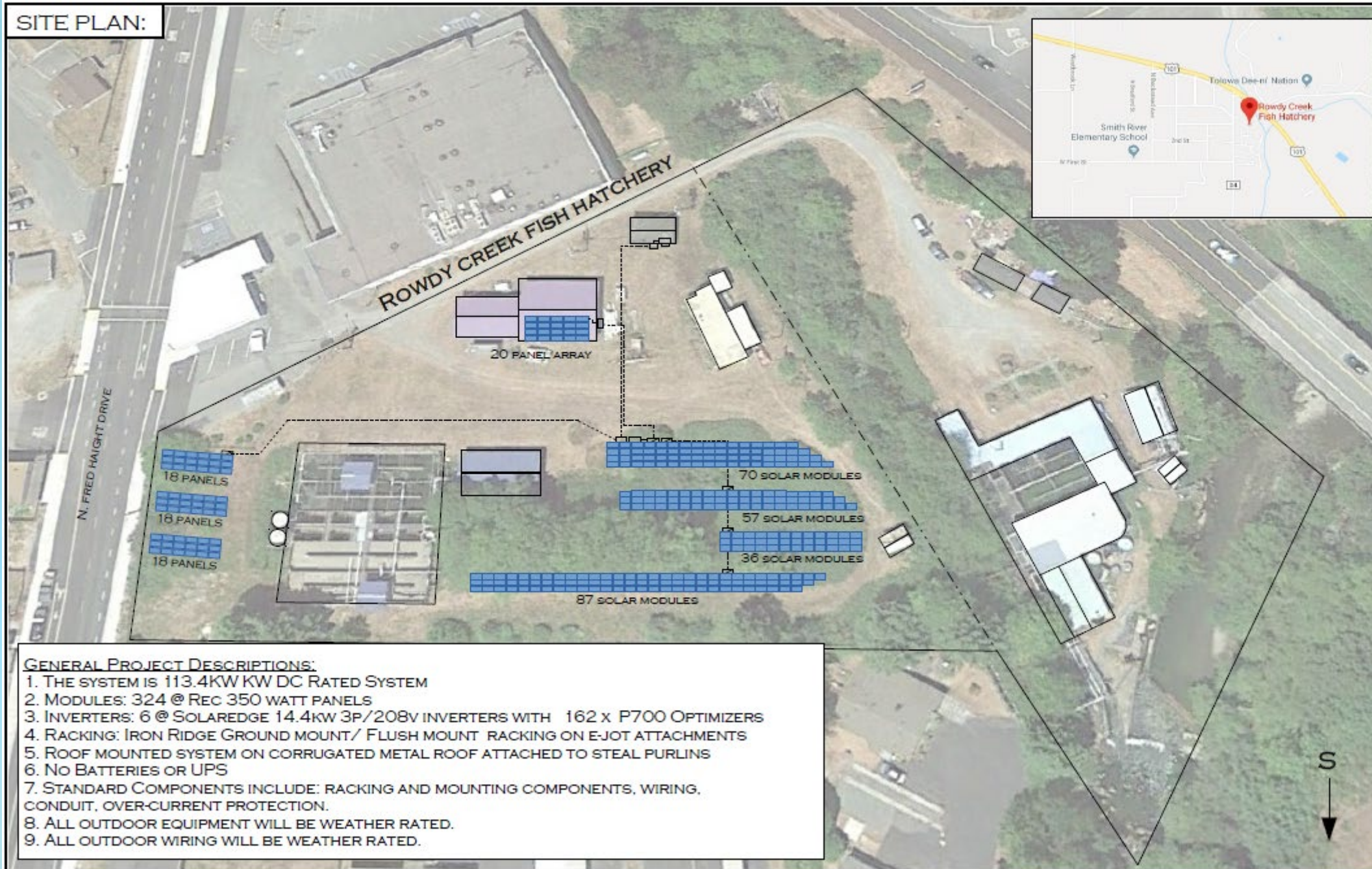
Project Participants

- Tolowa Dee-ni' Nation
 - Will prepare the landscape for panel installation along with appropriate contractors
 - Will assist in maintaining the system after installation
 - Will be in charge of grant administration
- Rowdy Creek Fish Hatchery
 - Will assist in maintaining the system after installation
- Greenwired Renewable Energy Solutions
 - Will design and build the system
 - Assist with getting the required permits
 - Obtain interconnection agreement with Pacific Power
 - Assist with any additional needs require to construct and operate the PV system

Project Objectives

- 113.4KW Photovoltaic system includes:
 - 324 x 350watt REC solar panels
 - 162 x SolarEdge P700 Power Optimizers
 - 6 x SolarEdge 14.4KW 3 Phase inverters
 - Ironridge Ground mount and Roof Mount Racking Systems
 - Associated electrical BOS for grid inter-tie and PV array stringing
- Installation of 20 panel roof mounted system using Ejoy attachments and Ironridge racking system (storage building will require engineering to assess solar weight loads on roofing structure).
- Installation of 304 panels on 7 different ground mounted solar arrays using Ironridge ground mount racking system and trenching between solar arrays. The ground mounted systems will require grading and landscaping of selected areas around the hatchery (will require engineering and soil testing).
- Installation of electric BOS from arrays to PV inverters eventually tying into the 400 amp service via line side tap on utility conductors. Line side tap requires utility approval.
- Removal of trees and vegetation in selected areas that will effect solar production.
- Installation of landscaping material to impede vegetation growth beneath the arrays post construction and installation of landscaping materials to mitigate potential run off into waterways as a result of construction.

SITE PLAN:



GENERAL PROJECT DESCRIPTIONS:

1. THE SYSTEM IS 113.4KW KW DC RATED SYSTEM
2. MODULES: 324 @ REC 350 WATT PANELS
3. INVERTERS: 6 @ SOLAREEDGE 14.4KW 3P/208V INVERTERS WITH 162 x P700 OPTIMIZERS
4. RACKING: IRON RIDGE GROUND MOUNT/ FLUSH MOUNT RACKING ON E-JOT ATTACHMENTS
5. ROOF MOUNTED SYSTEM ON CORRUGATED METAL ROOF ATTACHED TO STEEL PURLINS
6. NO BATTERIES OR UPS
7. STANDARD COMPONENTS INCLUDE: RACKING AND MOUNTING COMPONENTS, WIRING, CONDUIT, OVER-CURRENT PROTECTION.
8. ALL OUTDOOR EQUIPMENT WILL BE WEATHER RATED.
9. ALL OUTDOOR WIRING WILL BE WEATHER RATED.

DESIGNED BY:
- JAR 2018 -

APN: 103-060-026000

CUSTOMER:

ROWDY CREEK FISH HATCHERY
255 N. FRED HAIGHT DRIVE
SMITH RIVER, CA 95567
P: 707-487-3443 E: MEGAN.VANPELT@TOWOLA.COM

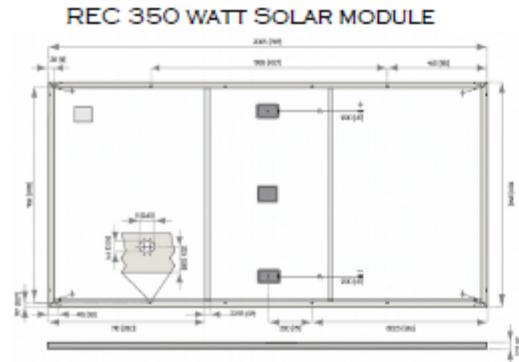
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1150 #1 EVERGREEN RD
REDWAY, CA 95560
P: 707-923-2001

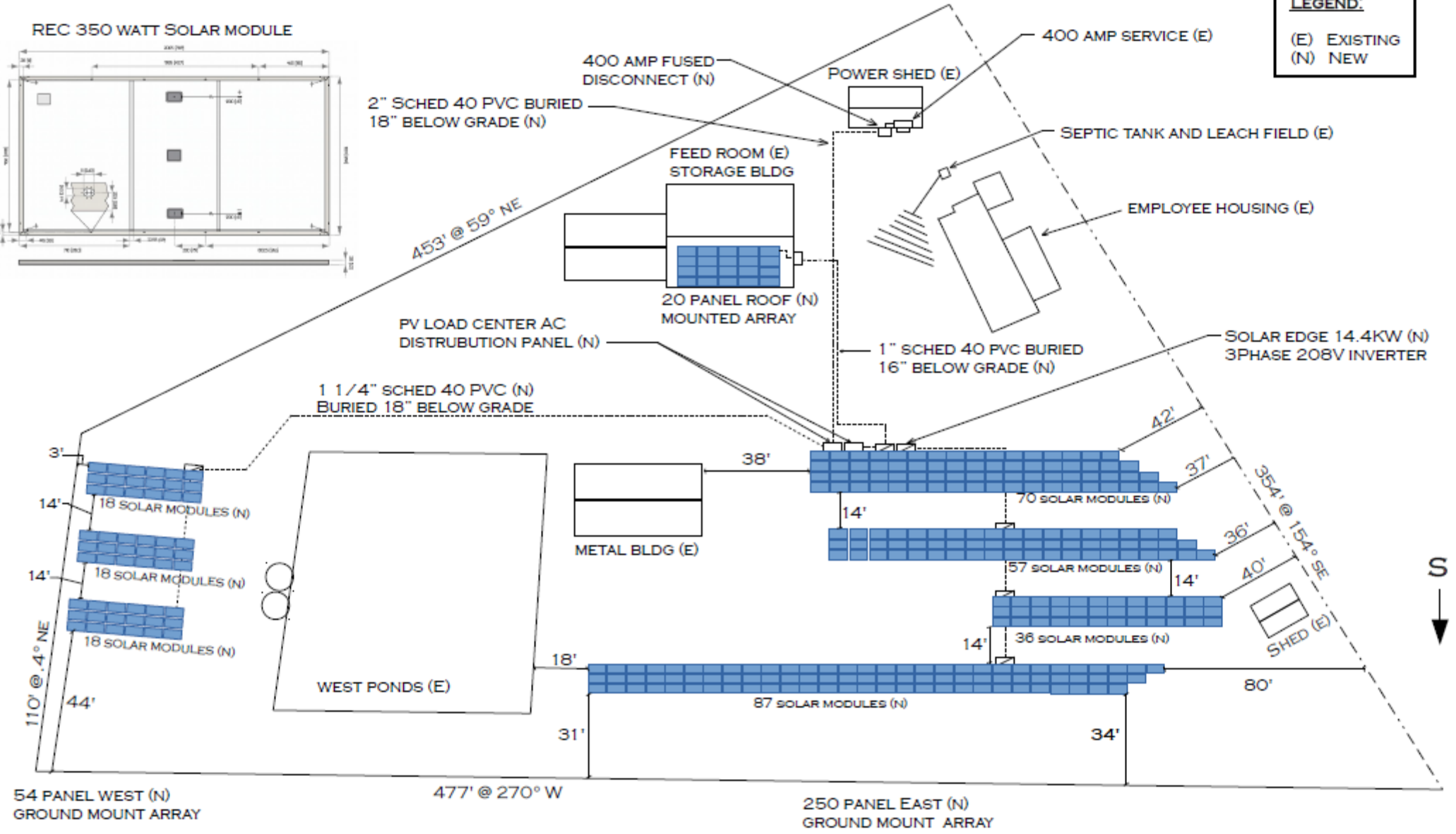
CONTRACTOR:



PLOT MAP:



LEGEND:
(E) EXISTING
(N) NEW



DESIGNED BY:
-JAR 2018-

APN: 103-090-02-6000

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CONTRACTOR:
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WWW.GREENWIRED.COM

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