

JOHN DAY SCREEN AND PASSAGE PROGRAM: CURRENT ISSUES

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John Day Shop Manager



PROGRAM OVERVIEW

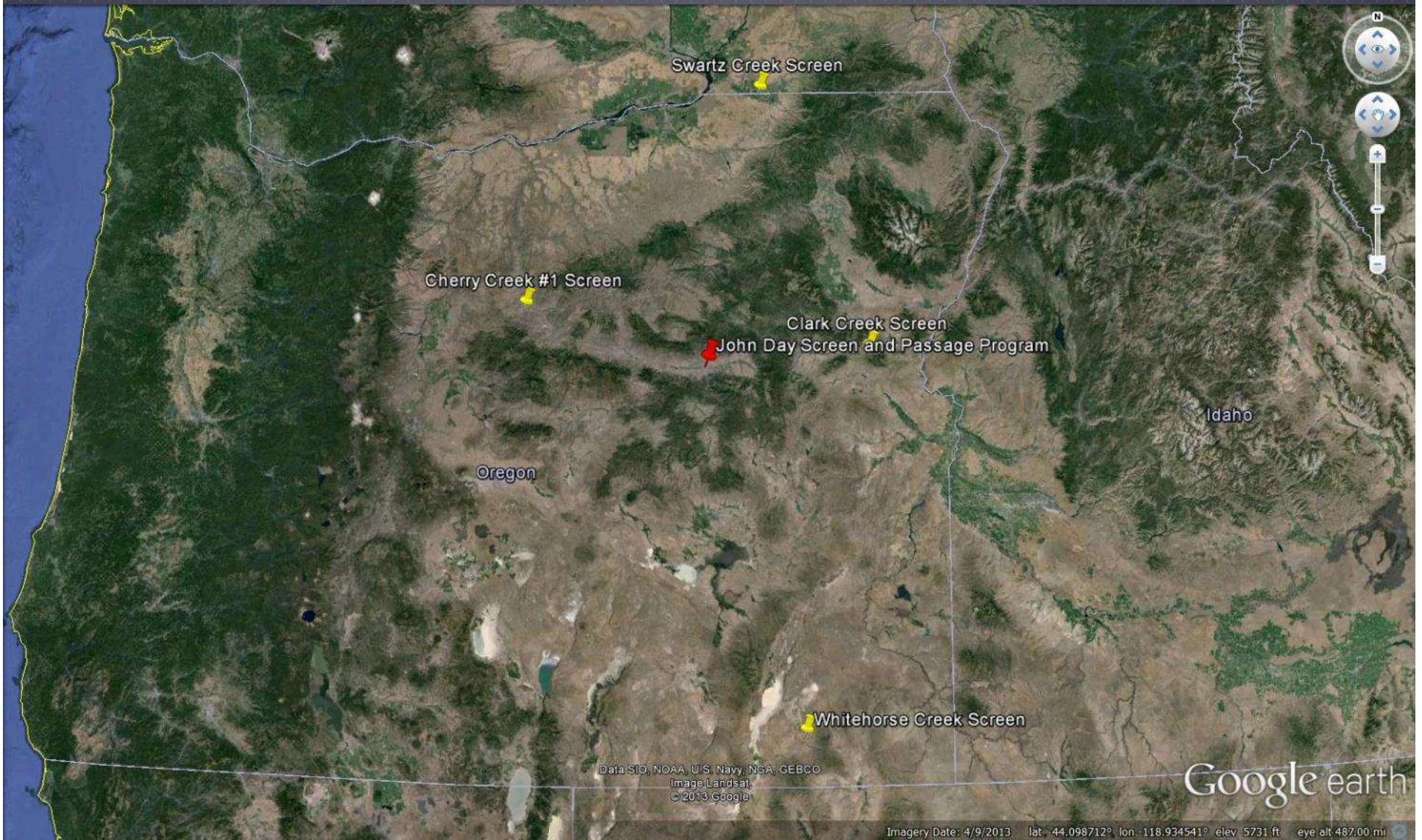
➤ New Project Funding

- ODFW Cost Share
- BPA
- At least 20 projects per year

➤ Maintenance

- Fishing License Surcharge
- Mitchell Act (NOAA)
- Over 300 screen sites in Anadromous
- Over 45 passage structures in Anadromous
- Over 200 pump screen sites in Anadromous
- Over 60 screen, passage and pump screen sites in Non-Anadromous

AREA OF RESPONSIBILITY



PRESENTATION TOPICS

- ▶ Intralox/Hydrolox Drum
- ▶ Belt Screen Self – Adjusters
- ▶ Orifice Boards
- ▶ Solar Panels

INTRALOX/HYDROLOX DRUM

- We have several sites that have excessive hard water
- West Branch Bridge Creek near Mitchell, Oregon – 4'x24" solar drum
 - Originally installed in 2000
 - Rotary brush installed in 2010 for additional cleaning
 - Hard water deposits were still occurring
 - Hydrolox belt material installed as alternative to Stainless Steel Perforated Plate on June 5th, 2013

SCREEN AS OF 2010





THE PROBLEM!



NEW SCREEN MATERIAL



CONCLUSIONS

- ▶ Perforated Plate – 33% open area
 - ▶ Last purchase of 4 foot wide SS Perforated plate was \$37.52 per foot
 - ▶ 80 inches used equals \$250.13
- ▶ Intralox / Hydrolox material – 32% open area
 - ▶ On a 4 foot wide screen, this equals \$116.14 per foot
 - ▶ 93 inches used equals \$900.08
- ▶ Based on angle between modules and curvature of drum, would not recommend Intralox/Hydrolox material on anything smaller than an 18 inch diameter drum (seal issues)

CURRENT STATUS

- ▶ As of August 19th, 2013:



BELT SELF - ADJUSTERS

▶ Background

- ▶ In conjunction with the use of Intralox/Hydrolox belt material (on belt screens), John Day uses a solid steel roller on bottom
- ▶ Advantages:
 - ▶ Reduces construction costs
 - ▶ For a three foot belt: Cost of three foot roller \approx \$400, Cost of three foot Intralox shaft, sprockets, and collars \approx \$700
 - ▶ Reduces tracking issues
- ▶ Disadvantages (at least what we think):
 - ▶ Material deposition between belt and roller

▶ The Problem

- ▶ As material builds up, only way for belt material to adjust is to break

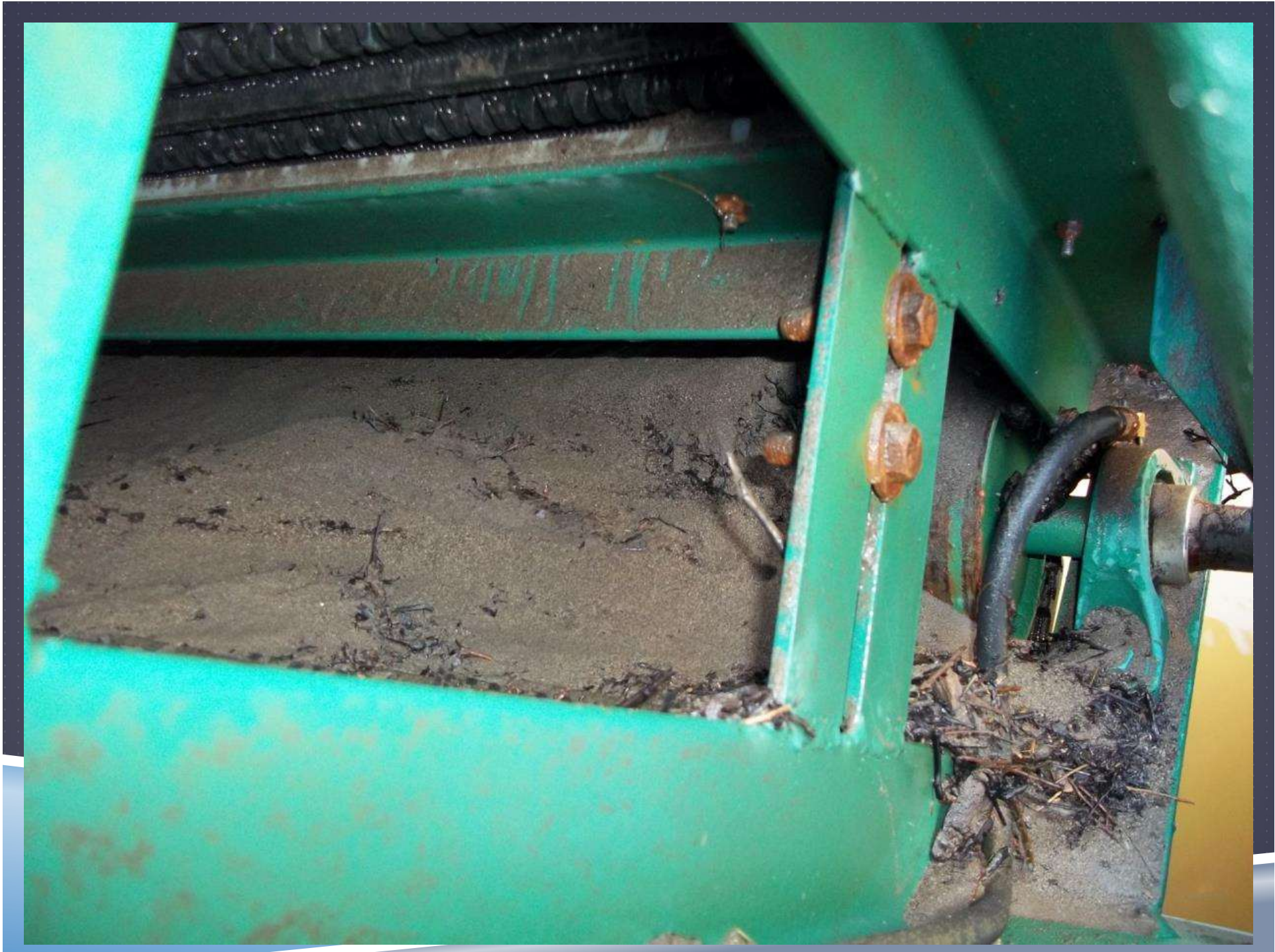
▶ Solution

- ▶ Spring operated self-adjusters

▶ Testing

- ▶ One site converted from wiper to a series of belt screens in July 2013











ORIFICE BOARDS

▶ Background

- ▶ Water becomes more scarce as irrigation season progresses
- ▶ Most sites, water right is cut in half after June 1st in the John Day Basin

▶ The Problem

- ▶ Difficult to design a screen that can fit a wide range of irrigation flows
- ▶ Paddlewheel driven rotary drums have always been the initial consideration for all sites
 - ▶ The current 16 blade paddlewheel is very safe (for employees), but will not operate under all water flow conditions
- ▶ Where a paddlewheel driven rotary drum won't work, utilize solar
 - ▶ Solar is more expensive

▶ One Solution

- ▶ Orifice Boards
- ▶ Can be made out of any size PVC pipe
- ▶ Cutting the pipe to a length where it ends near the paddlewheel blade is more important than the size of pipe







SOLAR PANELS

▶ Background

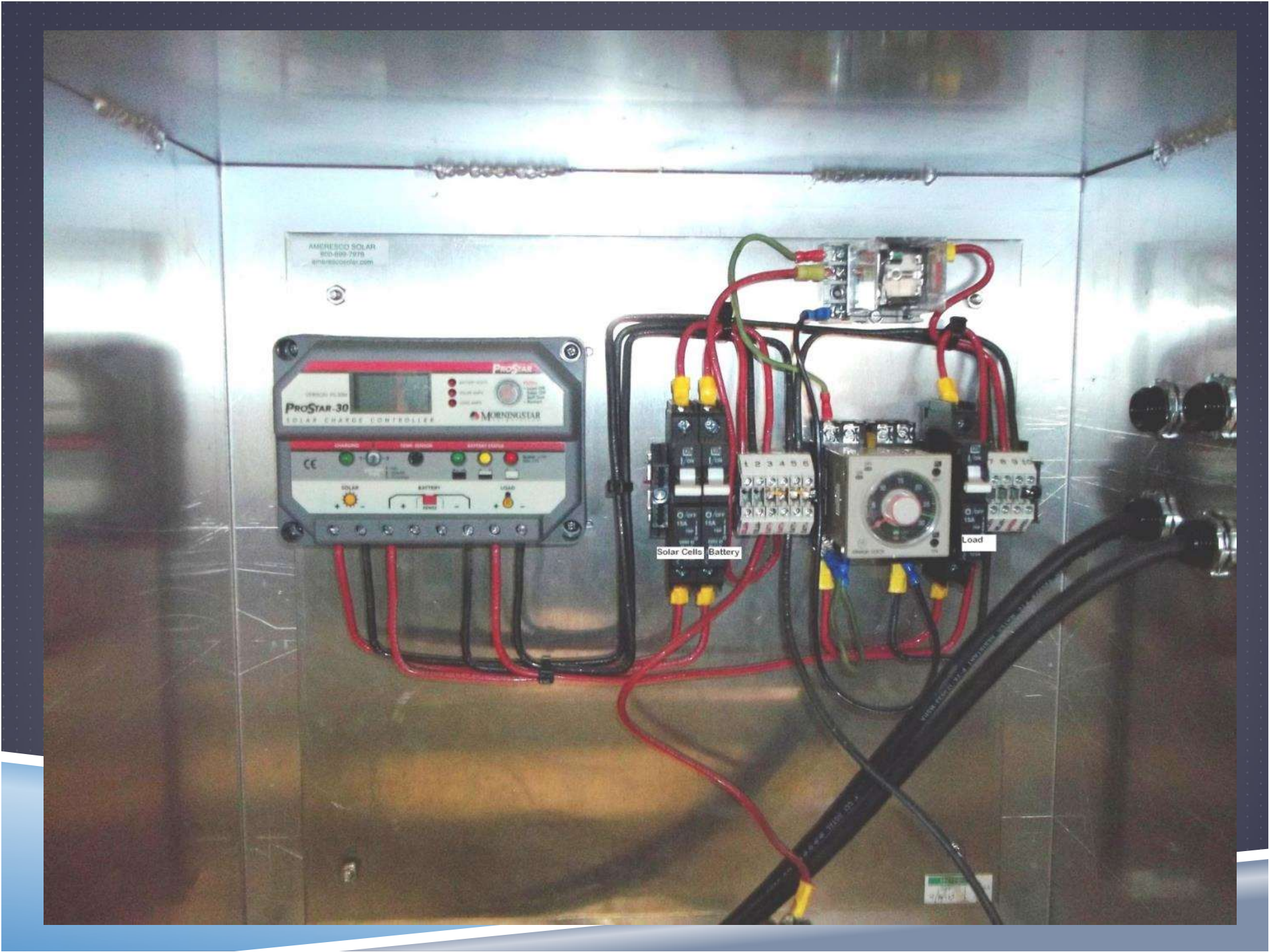
- ▶ Use of solar at sites that have extreme ranges in water use
- ▶ Typically dictated by the low end of water use where a paddlewheel won't work
- ▶ John Day design calls for 24 volt solar system

▶ In 2009, a 50 Watt, 12 volt Panel cost around \$300

- ▶ To conserve money, it was determined that two, 50 watt panels wired in series (voltage doubles to 24 volt) was the minimum on our screen projects
- ▶ With two 100 amp/hour batteries, and the two 50 watt panels, expected to last for three consecutive cloudy days
- ▶ Amperage output was around 2.5 amps for the combined array
- ▶ Total cost for both panels equaled \$600 (complete solar unit between \$2,000 and \$2,500)

▶ Today, I could purchase a 230 Watt, 24 volt Panel for \$175

- ▶ Voltage is already at the amount we need for our systems
- ▶ Amperage output for this size of panel is almost 8 amps (over three times the output)
- ▶ Savings of \$400



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