Earth by Design - “45 Mile” 3.5MW Hydroelectric Project RAC Review

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Quick Facts:

- 3rd Party Developer utilizing North Unit Irrigation District resource.
- 3.5MW capacity
- ~47% capacity factor (~14,200 MWh)
- QF Interconnection to PacifiCorp
- Energy Trust provided a ~$20k feasibility incentive and in-kind FERC permitting assistance.

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Project status:

- Majority of design work complete
- Approved for $7.2MM SELP Loan
- Applying for Tier 3 BETC (no precert)
- Interconnection study process underway
- QF PPA just getting started
- FERC permitting underway
- State permitting follows FERC
- Expected construction: ~11/2010 – 2/2012
- Expected operation: ~March 2012

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Where is it? (Near Madras)

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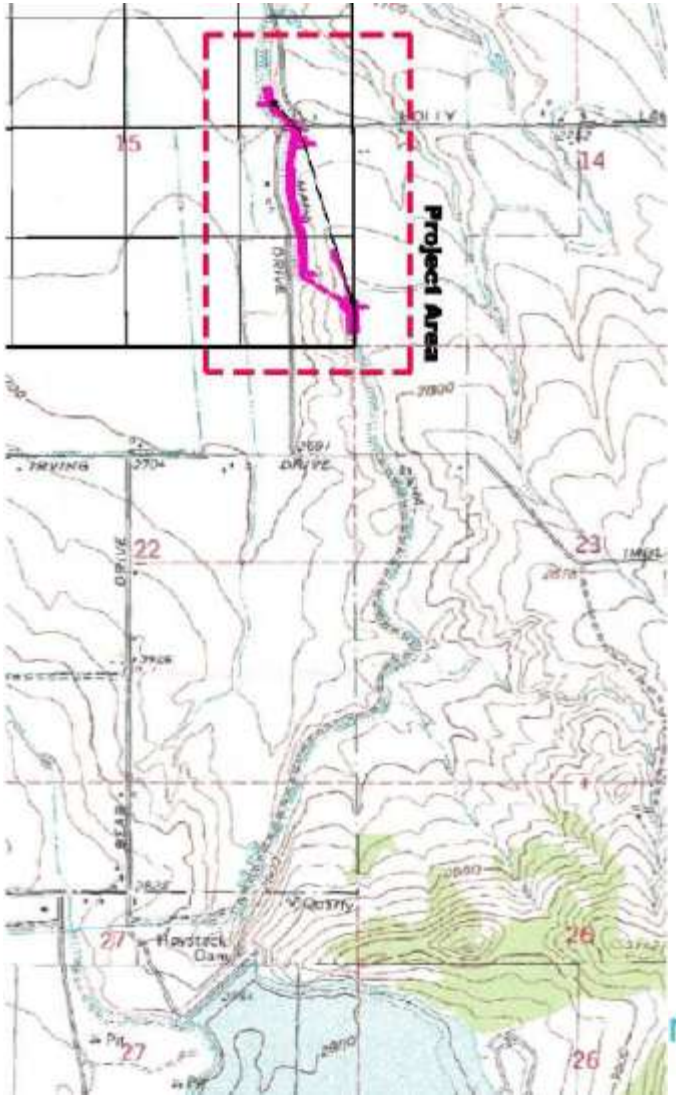
1.8 Miles North of Haystack Dam on North Unit Main Canal



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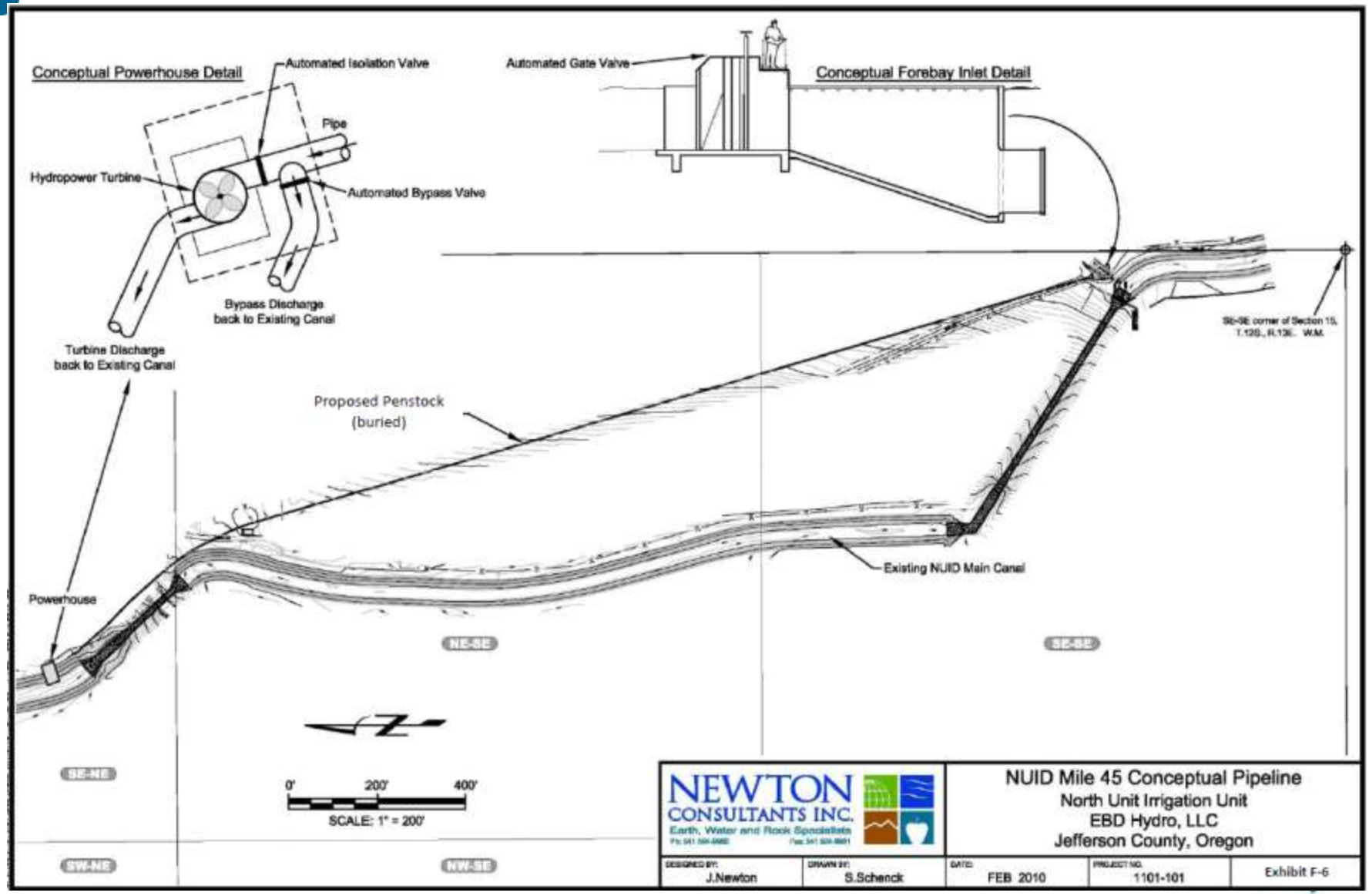
Project Development Plans



Looking at the top of the 1st drop at the head works, gates and takeout

Looking back at upper drop, gate

Looking down concrete flume from top rail

Looking North/West across private property controlled by EBD Hydro

Looking up from the bottom of the 1st drop

Looking North along canal from 1st drop to 2nd drop

Looking from top of 2nd drop across road

Looking up from bottom of 2nd drop below paved road

Looking North down canal from 2nd drop

Project Head and Flows, Generation

Based on 2001-2009 data from Mile 56 gauge

Month	Days	Average Head (ft)	Adjusted Estimated Flows at Mile 45*	Average Plant Efficiency	Monthly Generation (kWh)
April	18	128	257	85%	1,017,857
May	31	128	302	89%	2,169,671
June	30	128	322	90%	2,253,902
July	31	128	287	88%	2,038,349
August	31	128	303	89%	2,178,093
September	30	128	279	87%	1,901,479
October	19	128	222	78%	856,553
ANNUAL GENERATION					
Their Conservative Math	190	128	330	87%	14,189,206
Their Plan Math	190	128	370	87%	15,950,308

* Flows are increased by 46cfs to reflect losses from water deliveries, seepage, and evaporation that occurs between Mile 45 and Mile 52

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Evaluation

Additional Information

- Developer's goals:
  - Relationships, success, time frame
- Leveraged project
- Taxable project: ITC grant, 20-year depreciation
- BETC
- Generation starts in 2012
- Evaluated at with 25 year project life

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Evaluated Scenario

- Cost: $15.3MM
- Generation: 14,189MWh
- RECs: Not evaluated initially
- BETC: $3.9MM pass-through

- AMC: $6.11MM
- Payback: Year 19

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Proposal

- $2,000,000 incentive (NPV: $1,516,315)
- Paid over 5 years based on meeting minimum performance goals.

- 13% of total project cost, 25% of AMC
- **$1.23MM per aMW**

- RECs: $31.19 levelized, $22.50 nominally

- 25 year REC contract w/ Energy Trust
  - Asking for 25% of RECs based on policy

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Comparisons to Similar / Recent projects

Swalley ID 750kW Hydro: $916,000
99% of AMC, 100% of RECs for 20 years
Cost per aMW: $2.91MM

Central Oregon ID 3.5MW Hydro: $1.0MM
73.8% of AMC, 75% of RECs for 20 years
Cost per aMW: $0.65MM

RES 795kW Dairy Digesters: $1.7MM
54% of AMC, 60% of RECs for 15 years
Cost per aMW: $2.6MM

Stalbush Island Farms 1.6MW Digester: $830,000
78% of AMC, 52% of RECs for 15 years
Cost per aMW: $0.63MM

enXco 3MW Solar: $3.45MM
87% of AMC, 100% of RECs for 25 years
Cost per aMW: $7.9MM

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