AC Lawrence Tannery Location, Orientation & Background
SWRPC’s Brownfield Assessment Program Goals
Winchester’s Challenges and Goals with the Site
NH Department of Environmental Services Process for Reviewing Solar Arrays and Approach to the Site
Ransom Consulting’s Findings and Recommendations for the Site
Encore Renewable Energy’s Interest and Challenges with the Site
Location/Orientation
Site History

- Constructed circa 1908
- Shearling tannery - sheep skin leathers
- Ceased operations 1987
- Abandoned and left Town
- Vacant and underutilized ever since
- Tannery structures demolished
- Contamination issues
Contamination

- Removal of approximately 360 drums of tannery sludge in 1983
- Removal of 100 containers of waste material and approximately 800 tons of sludge in 1992
- Removal of debris, sludge laden with heavy metals, ~1,700 gallons of PCE contaminated water, 40 cubic yards of asbestos materials, 50 tons of chromium-contaminated sludge/sweepings in 1999
- Removal of 788 tons of chromium soils in 2003
- Varsol (still 30,000 cubic yards left) and Chromium contamination remains
SWRPC Brownfields Assessment Goals

- Provide information Town of Winchester needs to make informed decision about future use of property
- Help them understand options and challenges for redevelopment
- Solar development good option?
  - Contamination
  - Floodplain
  - Defunct bridge
  - Southern orientation
  - Three Phase power
  - Flat with foundations
Town Challenges with the Site

- Town owned property that has sat idle for many years providing no value to the community.
- No tax revenue.
- Eyesore
- Little to no funding available to properly address the contamination on the site.
- The contamination of the site has made it difficult to redevelop.
- What can the town do with the site??
SWRPC and Monadnock Sustainability Alliance approached the town with a 100 kW Community Solar Idea for the AC Lawrence Site in 2017.

- Basic brush clearing
- Arrays placed on ballasts
- Three phase power, southern orientation

Selectboard's big questions:
- Why tie up land with solar array for 20+ years?
- What are benefits to town?
Solar Array 2.0

Brownfields Listings connects SWRPC with Encore Renewable Energy for a 100 kW project.

Site visits, meetings in 2018

Benefits:
- Leased land
- Payment in lieu of taxes (PILOT)
- Potential energy savings
- Renewable energy
Steps to Move Forward

- Presented the Select Board with a Solar Redevelopment Project.
  - Town Attorney reviewed proposed project & agreements.
    - Secure approvals required by NHDES
    - Town will have access for annual testing/monitoring the wells.
    - Consult with the town’s insurer.
  - Negotiate: Lease agreement, PILOT & NH Net Metering agreement.
  - Discussions with Ransom Consulting & NHDES on the Brownfield assessment & remediation plan.
  - Working with NHDES on permitting.
What is NHDES’ role?

- Where your proposed solar development is located will dictate who you need to talk to within NHDES
- Alteration of Terrain for most larger projects
- Depending on specific location...
  - Wetlands
  - Shoreland Protection
Solar on Underutilized Properties

- Closed landfills - Solid Waste Management Bureau
- Brownfields – Hazardous Waste Remediation Bureau / Brownfields Program
- Superfund sites – Hazardous Waste Remediation Bureau / Federal Sites Section
NHDES Policy on Solar Development

- Currently no specific NHDES policy regarding the siting of solar developments
- That said…

We would prefer this to this
NHDES Contacts

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- Closed landfills........ Jaime Colby, P.E.
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- Policy..................... Thomas O’Donovan, P.E., Director, Water Division
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  Thomas.O’Donovan@des.nh.gov
Case Study: AC Lawrence, Winchester, NH

January 2001
EPA and NHDES Brownfields Involvement

- 1983 – EPA/NHDES, Clean-up of drum disposal area on southern portion of the site
- 1993 – Property abandoned and taken by the Town for back taxes
- 1998/1999 – Site Investigation / Clean-up
- 2001 – Brownfields Assessment Grant for Site Investigation and RAP
- 2003 – EPA led excavation of chromium impacted soil
- 2005 – Groundwater Sampling
- 2011 - 2015 - Various Site Investigation Activities
AC Lawrence – 20+ Years of Progress

January 2001

May 2019
Solar Potential
NHDES Pre-Permitting Discussions

- Proposed project may:
  - Impact > 100,000 square feet or 50,000 sq ft in Protected Shoreline
  - Be within 250 feet of Protected Shoreline
  - Near/within floodplain

- Alteration of Terrain
- Shoreland Protection
- Contamination considerations
Previously Identified Soil Contaminants

- Coal Combustion Residuals (PAHs, Pb, As)
- Chlorinated Solvents
  (historic storage & use)
- Varsol
  (petroleum solvent)
- Chromium
  (Leach House)
Previously Identified Groundwater Contaminants

- Chlorinated Solvents (PCE, TCE)
- Varsol
- Chromium
- PFAS
Assessment Needs for Remediation Planning

- Trends Assessment – Attenuation Supported? (CVOCs, LNAPL)
- Chromium Delineation
- PFAS
LNAPL Trends

- Limited Recent Data
- LNAPL thickness greatly diminished under high and low static groundwater levels

Dissolved Contaminant Trends

- Stable or decreasing concentration

Considered Receptors
Additional Investigations: Chromium-Impacted Soil

- Depth
  0-2 Feet Below Grade
## Remedial Alternatives

<table>
<thead>
<tr>
<th>ALTERNATIVES</th>
<th>DECISION CRITERIA WEIGHTING FACTOR</th>
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<tr>
<td></td>
<td>Overall Protection of Human Health and the Environmental</td>
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<tr>
<td>1. Monitored Natural Attenuation</td>
<td>2</td>
</tr>
<tr>
<td>2. Excavate and Dispose of Soils with SRS Exceedances</td>
<td>5</td>
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<tr>
<td>3. Excavate and Dispose of Chromium-Impacted Soils, Varsol Area MNA</td>
<td>3</td>
</tr>
<tr>
<td>4. Excavate and Dispose of Chromium-Impacted Soils, Varsol Area Oxidant Injection</td>
<td>5</td>
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Remedial Action Plan & Redevelopment

- Cap & Activity and Use Restriction for soils during as part of Solar Lease redevelopment
- Groundwater Monitoring under Groundwater Management Permit
- Excavate and remove chromium-impacted soil during lease period
- If warranted, at end of Solar Lease, inject steam and oxidants in Varsol area
About Encore Renewable Energy

- Founded in 2007. Based in Burlington, VT
- C&I and community-scale solar developer / EPC
- Focus on development on underutilized properties (e.g., landfills, rooftops)
- Certified B-Corp
- 65 projects / ~35 MW installed capacity to date
- 4 solar projects installed on landfills / brownfields
- Currently developing 7 additional brownfield solar projects
Encore’s Role

- Originate feasible solar projects
- Execute lease & offtake agreements
- Detailed financial analyses
- Risk identification / management
- Project design & permitting
- Secure project financing
- Construction
- Asset management / operation
Brownfield Challenges

Higher development costs
- Significant engineering calcs & design constraints
- Closure permit amendment
- Additional storm water permitting requirements
- Regulatory processing – state / federal corrective action & remediation process

Higher construction / financing costs
- Ballasted racking
- Smaller, low pressure construction vehicles
- Topographic (slope) constraints
- Economies of scale (currently capped at 1 MW)
- Environmental insurance
- Higher perceived risk = Higher cost of capital
Opportunities for AC Lawrence Site

- Supportive stakeholders & regulators
- Acceptable interconnection
- Flat topography with good exposure to south
- Creation of tax / PILOT revenue
- Creation of lease revenue
- Creation of NM savings
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