Biochar Use in Capping Abandoned Oil & Gas Wells

International Biochar Initiative

Biochar Webinar Series
April 18, 2022
Quick Notes

• You should be able to hear me talking now.
• Two Audio Options: Phone or Computer
  • Choose one and connect
  • Pro tip: Don’t call in on your phone if your audio is set to “Mic & Speakers”
• Ask questions using the Questions Panel on the right side of your screen ANYTIME.
• The recording of the webinar AND the slides will be available after the event.
IBI Mission
To provide a platform for fostering stakeholder collaboration, good industry practices, and environmental and ethical standards to support biochar systems that are safe and economically viable.

Vision
One billion tons of biochar produced per year within 50 years.

Learn more about IBI’s work, upcoming events, biochar certification, and membership: www.biochar-international.org
Thank You

New & Returning Sustaining, Business & Organizational Members

Sustaining
• US: Bio-restorative Ideas, Corigin

Business
• Australia – Rainbow Bee Eater
• Finland – Carbofex
• Switzerland - Enchar
• UK – Carbon Gold
• US: Monterey Pacific, Natural Resource Research Institute, Soil Test Lab, Soil Worx LLC

Organizational
• NZ – City to Farm
• Ireland – Haggard Stores
• US – 1000 Years Institute, Arizona Log & Timber, Biochar Life, Cummins, Terra Preta NW
A veteran in origination, negotiation and structuring of several successful startups and exits, Mark has helped build the exceptional teams necessary to have launched and nurture more than a dozen respected companies over the last fifteen years. Today, he is excited to be focused primarily on the development of carbon offsets through eco-focused remediation efforts within the oil & gas and mining sectors.

Prior to co-founding OFX EcoSolutions, Mark founded Offset Energy Partners, Inc. Both companies are focused on the emerging carbon markets and serve a critical role in the development of carbon offsets through providing eco-focused reclamation and remediation services within the oil & gas and mining sectors. Mark is also a founder and managing partner in Kola Venture Group which has holdings in various cannabinoid ventures focused on ailment specific therapeutics. His responsibilities there have focused on product and brand development as well as operations.
Barry Salsbury is the CEO of Krewe Energy, LLC and Owner of Select Oilfield Services, LLC. He began his career with Tenneco Exp & Prod in 1985, which was acquired by Chevron in 1989.

Barry left Chevron in 2004 and founded Harvest Oil & Gas, to accumulate and develop oil & gas fields located in South LA, selling Harvest in July 2008. Barry then founded S2 Energy in Jan 2009, again aggregated and developed South LA assets. Barry founded his third start-up, Krewe Energy, in 2014 and currently owns and operates 350 wells in 10 various South LA oil & gas fields.

Barry also founded Select Oilfield Services in 2011 with a primary focus on providing wireline and abandonment services to his internal company as well as to the State of LA in abandoning orphan wells.

Barry is a graduate of LA Tech University with a Bachelor of Science in Petroleum Engineering and is an active member of numerous industry organizations. He serves as Chairman of the “Advisory Commission for Louisiana’s Energy, Environment, and Restoration” and appointed to LA’s Oilfield Site Restoration Commission.
EcoSolutions
CARBON OFFSETS THROUGH ECOFRIENDLY REMEDIATION SERVICES AND PRODUCT SALES

TRANSFORMING ORPHANED AND ABANDONED WELLS... FROM LIABILITIES TO ASSETS.

SPRING 2022
THAT’S WHERE WE COME IN.

We are an ESG-focused company committed to solving a problem that our industry and our government is actively beginning to address.

All of us collectively work toward a greener America, the challenge of effectively dealing with orphaned/abandoned oil wells are bubbling to the surface.
The Infrastructure Bill has allocated up to $21B toward the reclamation of orphaned and abandoned wells and mines.

State grants of those funds are starting in Q2 of 2022. Initially, a total of $4.7 billion is being allocated just for orphaned and abandoned wells.

Currently, each state is in the process of submitting grant requests for up to $25M that can be used in any number of ways intended to help the states address a number of growing needs.

Those needs are related to the remediation of these sites as well as the improvement of their operational protocols.

Our game-changing protocols promise to help the industry decarbonize operations.

We are prepared to get started immediately.
The EPA estimates that approximately 3.5M orphaned and abandoned well sites in America remain.

5 out of 10 orphaned or abandoned wells are emitting some level of methane or other greenhouse gases (GHGs).

2 out of those 5 are considered high emitting.
A multitude of factors determine the timing of such an action:

- economic environment
- wellbore integrity and reservoir depletion
- dissolution of the operatorship of the well
- state and federal regulations mandate that wells with no future utility are timely and properly plugged and the surface restored to pre-well conditions.

- Too often, shut-in wells are simply abandoned by the defunct operators and become orphaned and a liability of the state.

- Unless specifically brought to the attention of the regulatory

- Hence, these "abandoned" wells have the potential to become lost only to resurface later as an environmental concern, regardless of how large or small.

- Orphaned or abandoned wells can no longer be ignored. They are a significant cause of methane/ghg emissions and environmental contamination.

What does it mean to plug an orphaned or abandoned well?

The plugging of an oil and gas well can be defined as the effective termination of a well's productive life.

Orphaned or abandoned wells can no longer be ignored. They are a significant cause of GHG emissions and the contamination of soil and water supplies.
At OFXEco Solutions, plugging an orphaned or abandoned well is only step one of an acceptable solution.

Monies allocated should not result in a short-term fix. We believe in delivering an affordable long-term solution that rectifies, removes and reclams.

That's our unwavering commitment.
By utilizing biochar in our process, we incorporate a closed-loop/circular economy into every project in which we are engaged.

Increased demand for biochar helps:

• municipalities remove biomass from their landfills.
• companies reduce their disposal fees for their wood pallets, etc.
• paper and timber mills better eliminate their waste.
Biochar is an excellent choice for remediation and reclamation of oil and gas well sites.

Biochar...

• rejuvenates the biome.
• absorbs metals and other toxic compounds, etc.
• retains water.
• becomes a carbon sink in all of our applications.
Reducing the carbon intensity of oil and gas operations is a critical mission for the entire industry. OFXEco Solutions is helping lead that charge.

Our proprietary plug design not only reduces the carbon intensity of our operations but also can potentially turn every plug job into a carbon sink.
Our unique approach to responsibly plugging wells demonstrates our commitment to a long-term, sustainable solution.

Although each state may require additional procedures, the process of plugging a well typically involves these standard steps:

- Removal of surface and production equipment from a wellbore.
- Isolation of production perforations with portland cement.
- Filling of wellbore from bottom to surface with more portland cement.
- Cutting casing below plow line; weld plate on top of casing with identifying info and date and backfill with dirt.

Our “Stacked Pay” Ofx Plug Design utilizes a proprietary blend of traditional and newly approved materials.

The addition of unique carbon negative materials as well as a substantially reduced amount of cement results in a more resilient and “Self Healing” Plug That also reduces, if not eliminates, carbon intensity.
A significant number of orphaned and abandoned wells have been emitting methane and other greenhouse gases. Some for decades. By monitoring the number of emissions and quantifying the Co2e that is avoided by the plugging of these wells, we have the potential to create voluntary offset credits that could be used to reduce the carbon intensity of any company’s operations.

<table>
<thead>
<tr>
<th>Emissions</th>
<th>Displacement</th>
<th>Carbon Sink</th>
</tr>
</thead>
<tbody>
<tr>
<td>A significant number of orphaned and abandoned wells have been emitting methane and other greenhouse gases. Some for decades. By monitoring the number of emissions and quantifying the Co2e that is avoided by the plugging of these wells, we have the potential to create voluntary offset credits that could be used to reduce the carbon intensity of any company’s operations.</td>
<td>It is estimated that for every ton of Portland cement produced, a ton of CO2E is produced. That means that if a traditional approach to plugging a well would have used 20 tons, the “carbon intensity would roughly equal 20 tons of CO2E emitted. Our proprietary plug designs incorporate the use of alternative greener materials that have the potential to displace upwards of 80% of the carbon-intensive cement used in a traditional 'bottom hole to surface' plug. That helps to avoid up to 16 tons of CO2E in the scenario, further reducing carbon intensity of operations.</td>
<td>In addition to stopping emissions and avoiding excess CO2E through cement displacement, we are incorporating a renewable and carbon rich material into our proprietary plug design. This step sequesters additional CO2E in the wellbore creating a permanent &quot;carbon sink&quot;, further reducing the carbon intensity and potentially making the entire process &quot;carbon negative&quot;.</td>
</tr>
</tbody>
</table>
Reclamation of our country's millions of orphaned and abandoned well sites is a critical component of our eco-friendly commitment.

Restoring the contaminated surface area surrounding the abandoned wellbores and mines can not be ignored during the comprehensive plugging process.
For more information regarding our mission or for answers to any questions you may have, please contact us.

Mark Mersman
Markm@ofxeco.com
972-832-4894
QUESTIONS?
Upcoming Events

IBI WEBINARS
• May 4, 2022 – Biochar as a component of soil-less growing media - Nadav Zev, Omar Frenkel
• Full 2022 Webinar Schedule coming in May!

NEW IBI PODCAST SERIES
• Episode 1 – VOW/ETIA;
• Upcoming Episodes: Carbofex, Syncraft, ARTi, Biomass Controls

IN PERSON EVENTS
July 3 - July 8  SIBECOL AIL Meeting 2022, University of Aveiro Aveiro, Portugal
Aug 9 – 11    USBI Biochar Conference, Morgantown, W Virginia
Become an IBI member!

If you paid for today’s webinar and would like to convert your registration to become an IBI professional member and have access to all previous webinars and listen to any new webinars for the next 12 months, you can do so for only $40. A discount for upgrading to business and organizational members is also available.

This offer is only good through the end of April 2022
Please contact Brian Schorr at: BSchorr@ttcorp.com