

## TECHNICAL VOLUME

**Company:** Syrah Technologies LLC

**Project title:** Phase 3 expansion of Syrah Technologies' commercial-scale natural graphite active anode material facility in Vidalia, Louisiana

**FOA AOI 2:** Commercial scale Domestic Production of Battery-Grade Graphite from Synthetic and Natural Feedstocks

**Technical point of contact:** Anne Duncan, Syrah Group's Vice President USA Processing Operations and Syrah Technologies' Board of Managers

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**Team member organization:** none

**Senior/key personnel:** (b) (4)

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### 1. Project Overview

#### a. Syrah Group Overview

Syrah Resources Limited ("Syrah") is an Australian Securities Exchange listed natural graphite and battery technologies company with an operating natural graphite mine and processing plant in Balama, Mozambique ("Balama") and a downstream natural graphite active anode material ("AAM") processing facility in Vidalia, Louisiana ("Vidalia"). Syrah Group's US business, inclusive of Vidalia, is conducted by Syrah Technologies LLC ("Syrah Technologies"), a wholly owned subsidiary of Syrah and the Prime Applicant / Recipient. Vidalia's assets, including plant, property and equipment associated with expansion, will be wholly owned by Syrah Technologies and Syrah Technologies is envisaged to be the counterparty to key commercial arrangements (e.g. customer offtake, construction services contracts, equipment purchase agreements and insurance). Syrah Group's operations are supported by a corporate head office in Melbourne, Australia, and a Marketing, Sales and Logistics team based in Dubai, United Arab Emirates. Syrah Group comprises of these operations and support functions. Syrah Group aims to become the first ex-



China vertically integrated producer of natural graphite AAM, which is enabled by the globally significant Balama graphite operation in Mozambique. Balama is the only operating asset outside of China that can supply significant volumes of natural graphite into the lithium-ion battery supply chain for production of battery-grade anode material. Vidalia represents the most advanced large-scale vertically integrated AAM supply option outside of China for USA-based battery supply chain and automotive original equipment manufacturers (“OEMs”) customers.

Syrah Technologies’ principal place of business is at 2001 D A Biglane Road, Vidalia, Louisiana 71373, and the company is ultimately wholly owned by Syrah. Syrah’s shareholding structure is well dispersed (>13,000 shareholders) with a significant proportion being Australian-based institutional and private/retail shareholders. AustralianSuper, Australia’s largest superannuation (pension) fund currently has a 18% holding in Syrah’s issued ordinary shares. No other individual Syrah shareholder currently has a holding greater than 7% of Syrah’s total issued ordinary shares.

Balama is the largest integrated natural graphite mine and processing plant globally as measured by annual production capability of up to 350,000tpa natural graphite. It is the only natural graphite operation outside of China with a sunk capital base capable of supplying significant volumes of natural graphite into the battery anode supply chain. Operations at Balama commenced in late 2017, and commercial production was declared in January 2019. Balama has produced over 420,000 metric tons natural graphite from being commissioned, becoming the largest integrated natural producer globally. The globally significant Balama ore reserve (>50-year mine life), high reserve grade (16% total graphitic carbon), low cost at full capacity, and potential for expansion is expected to provide long-lasting and significant participation in the battery anode supply chain, which is exposed to the growth trend of electric vehicle adoption.

Key milestones of Balama are shown in Figure 1.

Mar 2022	Pemba port breakbulk shipments commenced
Mar 2021	Production recommenced at Balama
Mar 2020	Temporary suspension of production at Balama due to market conditions
Sep 2019	In response to drop in flake graphite prices, production moderated
Mar 2019	Graphite Mineral Resources and Ore Reserves updated
Jan 2019	Commercial production declared, with quarterly production of 33,000 metric
Dec 2018	Balama produced >100,000 metric tons natural graphite in 2018
Sep 2018	Mining Agreement finalised with Government of Mozambique
Jan 2018	Balama transitions to operations, global sales commenced
Nov 2017	First production of natural graphite
Jul 2016	Balama process plant construction commenced
May 2015	Feasibility Study completed

*Figure 1: Key Balama milestones.*



Syrah Technologies is planning several phases of expansion of the Vidalia AAM facility.

Phase	Overview	Status	Start of production	Commercial capacity utilization
Phase 1	Qualification scale facility using commercial equipment	Fully operational and producing on-specification AAM for customer testing and qualification	Producing	Presently utilizing full capacity
Phase 2	Approximately 11,250 metric tons per annum ("tpa") AAM facility	Final investment decision taken in February 2022 and presently being constructed	Third quarter of 2023	First quarter of 2024
Phase 3	Up to 45,000tpa AAM facility	Definitive Feasibility Study ("DFS") planned for 2022	(b) (4)	

Syrah Technologies' full application for FOA Number: DE-FOA-0002678 ("Full Application") is in connection with the expansion of Vidalia to at least an aggregate 45,000tpa AAM production capacity ("Phase 3")

Syrah Technologies, and Syrah, had invested over \$80 million as at 31 March 2022 in Vidalia in:

- acquiring land and buildings;
- acquiring and developing intellectual property (including a number of patents and a product roadmap);
- installing and commissioning integrated spherical, purification and furnace qualification operations ("Phase 1"), using commercial scale equipment, to produce on-specification AAM for customer qualification;
- obtaining environmental permitting;
- producing natural graphite anode precursor material and fully integrated AAM to battery specification for customer qualification and Syrah's ongoing technical product development;
- optimizing processes and other technical operational developments;
- developing relationships with potential downstream customers; and
- completing the Bankable Feasibility Study ("BFS"), front-end engineering & design ("FEED"), detailed engineering and procurement on Vidalia's expansion to approximately 11,250tpa AAM production capacity ("Phase 2").

Key milestones relevant to Vidalia are shown in Figure 2.

Jun 2022	Detailed engineering on Phase 2 expansion project 80% completed
Jun 2022	Completed site clearing, temporary buildings and 80% piling

<sup>1</sup> Subject to approval of the Phase 3 DFS and Phase 3 final investment decision.



<b>Feb 2022</b>	Worley Group awarded construction management services contract
<b>Feb 2022</b>	Final investment decision taken on Vidalia's Phase 2 expansion with project fully funded
<b>Dec 2021</b>	Offtake agreement executed with Tesla, Inc.
<b>Jun 2021</b>	Worley awarded detailed engineering and procurement services contract
<b>Jun 2021</b>	Transitioned to detailed engineering for 10ktpa AAM facility
<b>Jun 2021</b>	Integrated AAM dispatched to potential customers for qualification
<b>May 2021</b>	First fully integrated production of AAM from Vidalia
<b>Mar 2021</b>	Transition to initial detailed design for Vidalia Phase 2 Expansion
<b>Mar 2021</b>	Furnace installed and commissioning for Vidalia Phase 1 qualification production
<b>Dec 2020</b>	Vidalia Phase 2 expansion BFS completed, confirming robust economics
<b>Nov 2020</b>	Toll treated AAM dispatched for product qualification by customers
<b>Oct 2020</b>	First production of AAM (toll treated) using anode precursor from Vidalia
<b>Jul 2020</b>	First production of purified spherical graphite to battery specification from Vidalia
<b>Dec 2018</b>	First production of unpurified spherical graphite at Vidalia
<b>Sep 2018</b>	Vidalia Phase 1 study completed for qualification production at Vidalia
<b>Aug 2018</b>	Vidalia site purchase completed
<b>Mar 2018</b>	Benchmarking of AAM produced from Balama graphite completed
<b>Nov 2016</b>	Syrah Group announces plans to establish commercial scale facility in Louisiana
<b>Apr 2016</b>	Pilot test work program initiated (milling and purification)

*Figure 2: Key Vidalia milestones.*

The operating Phase 1 facility at Vidalia includes graphite milling capability (5,000tpa nominal capacity), batch scale purification capability (200tpa capacity), batch scale furnace capability (100tpa capacity) and all ancillary plant required to demonstrate capability to scale the facility commercially whilst maintaining product quality, environmental compliance and best practice health and safety procedures. The Phase 1 facility is producing volumes of uncoated and coated AAM for qualification by battery supply chain participants and OEM customers.

In February 2021, Syrah Group took a final investment decision for the Phase 2 expansion of Vidalia, supported by a binding offtake agreement from Tesla Inc., to purchase 8,000tpa AAM over a four-year duration and committed equity funding. Vidalia's Phase 2 expansion is well underway with detailed engineering almost 80% completed, equipment supply / construction services procurement materially progressed and on-site construction activities commencing. Start of production for the Vidalia Phase 2 facility is planned for the third quarter of 2023. Upon the start of production, Vidalia will be the only vertically integrated and large-scale natural graphite AAM producer outside of China and the first large-scale AAM producer in the USA, with the potential to increase in scale to provide ongoing supply security in line with market growth.



By 2026, USA-based lithium-ion battery manufacturing capacity is forecast to be 396GWh<sup>2</sup> per annum, which is estimated to require 384,000tpa AAM<sup>3</sup> with graphite being the dominant material in lithium-ion battery anodes across all cathode chemistries. Whilst it is evident that significant investment is underway and planned in significantly expanding lithium-ion battery manufacturing capacity in the USA, there has not been commensurate planning and investment in a localized battery anode material supply chain. USA-based battery manufacturers and OEMs are at risk of continuing to be largely reliant on Chinese, Japanese and Korean AAM imports. Accordingly, natural graphite has been designated a mineral critical to the economic and national security of the USA in Executive Order 13817. Vidalia will provide battery manufacturers and auto OEMs in the USA with co-located supply of AAM with a single, fully ESG auditable, chain of custody back to the source, reducing the USA's dependency on, and cost vulnerabilities of, imported AAM supply, and is aligned with Executive Order 13953 and Executive Order 14017.

Syrah Group's engagement with target customers and the forecast growth in lithium-ion battery manufacturing capacity for electric vehicles in the USA has demonstrated that AAM volumes demanded from Vidalia will significantly exceed 11,250tpa AAM. Therefore, Syrah Group has commenced a DFS on Vidalia's Phase 3 expansion with Worley Group. Syrah Group is targeting finalization of this DFS by the end of 2022 and detailed engineering, procurement, and construction phases for this scale of expansion will follow sequentially, subject to Syrah Board approval and customer and financing commitments. The expansion of Vidalia to a large-scale is underpinned by Balama and its world-class, large scale graphite resource.

Syrah Technologies purchased and commenced development at its 25-acre site in Vidalia, Louisiana in 2018. The site had a pre-existing 50,000 square foot industrial building which has been modified for Vidalia. The site has adjacent undeveloped land which Syrah Technologies may purchase for future expansion. In December 2021, Syrah Technologies purchased an additional 13 acres of the surrounding land for buffer zone / laydown areas for Vidalia's Phase 2 expansion and to accommodate further expansion of Vidalia. Syrah Technologies' Vidalia site has adjacent undeveloped land owned by the City of Vidalia for industrial use. Syrah Technologies is in discussions with the City of Vidalia to secure rights to land adjacent to its site to facilitate Vidalia's Phase 3 expansion.

The site is well located with access to key utilities (water/gas/power) and nearby access to the Mississippi river for potential barge transport of natural graphite feedstock to Vidalia from the Port of New Orleans in future. Proximity to the established US-based petrochemical industry provides access to key consumables (b) (4) ) and a capable and skilled workforce.

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<sup>2</sup> Source: Benchmark Mineral Intelligence Battery Megafactory Assessment, June 2022.

<sup>3</sup> 2026 forecast North American battery manufacturing capacity of 396GWh, 85% battery manufacturing capacity utilisation, 95% graphite anode market share and 1.2kg/kWh intensity of graphite in anode. Source: Benchmark Mineral Intelligence Battery Megafactory Assessment, June 2022 and Flake Graphite Forecast, Q1 2022, excluding capacity utilization assumptions which is a Syrah assumption.





*Figure 3: Left – Overview of Syrah's Vidalia property and surrounds. Right – Vidalia Phase 2 expansion construction progress at May 2022.*

Natural graphite from Balama is shipped in containers to Vidalia for value-added processing to AAM. The value-added process undertaken at Vidalia can be broadly defined in two-steps:

- Natural graphite concentrate (c.95% fixed carbon grade) from Balama is milled into a spherical shape with targeted particle size distribution and purified to produce an anode precursor material (99.95% fixed carbon grade). China currently supplies 100% of global natural graphite anode precursor material.
- Anode precursor is coated with carbon (usually pitch) and thermally treated to produce a finished natural graphite AAM ready to be used in a battery anode. China currently supplies approximately 85% of global natural graphite AAM.

Early development at Vidalia has been focused on establishing production lines that are of sufficient scale to demonstrate Syrah's capability to supply ex-Asia markets with AAM that represents a secure supply chain alternative to existing producers that:

- Has equivalent or superior physical and electrochemical properties to currently available material.
- Is cost-competitive with incumbent imported supply currently 100% from Asia.
- Is co-located with battery and electric vehicle manufacturers in the USA.
- Provides an environmentally superior alternative to existing AAM supply.
- Is capable of supplying growing US and European markets.





*Figure 4: Left – Milling Line. Left – Purification Plant.*

Vertical integration of Balama with Vidalia provides economic efficiencies to the cost of production. Additionally, vertical integration will provide a source of AAM supply with best practice Environmental, Social and Governance (“ESG”) credentials that can be verified back to the source. Positive ESG differentiation is increasing in importance, as greater understanding and visibility by manufacturers and consumers highlight challenges in parts of the existing battery materials supply chain. Syrah completed an independent lifecycle assessment (“LCA”) of its integrated operations, from Balama origin to Vidalia AAM customer gate, with Minviro Ltd. The Global Warming Potential (“GWP”) of producing natural graphite from Balama and transporting it to port was estimated to be 0.42kg CO<sub>2</sub> equivalent per 1kg natural graphite. The GWP of producing AAM at Vidalia, using natural graphite from Balama, was estimated to be 7.6kg CO<sub>2</sub> equivalent per 1kg AAM, including the impact of producing natural graphite at Balama and transporting it from Balama gate to Vidalia gate. Syrah’s operations exhibit materially lower (at least half and as low as a third of) GWP compared with a representative natural graphite supplier in Heilongjiang Province, natural graphite AAM supplier in Heilongjiang Province and synthetic graphite AAM supplier in Inner Mongolia Province, China. These areas in China are currently the principal supply locations for these materials.

#### **b. Project Goal**

Syrah Technologies’ goal for the project is to construct, commission and ramp-up production of the Phase 3 facility at Vidalia to at least a 45,000tpa AAM production capacity to create a large-scale natural graphite AAM producer outside of China and the first in the USA.

Critical success factors to this goal are:

- Completion of Vidalia Phase 3 DFS and confirmation of technical / commercial / market viability of the Phase 3 expansion
- Completion of detailed engineering of the Phase 3 facility.
- Execution of binding offtake agreements for the majority of Phase 3 production capacity.
- Execution of binding commitments to fully fund the capital costs of and working capital for the Phase 3 expansion.
- Successful completion of construction and commissioning of the Vidalia Phase 3 facility.
- Environmentally responsible and safe construction and operation of the Phase 3 facility.

#### **c. DOE Grant Impact**

A DOE grant will:

- Contribute to the overall funding requirement for capital cost of and working capital for the Phase 3 expansion of Vidalia
- Enable the rapid expansion of domestically manufactured natural graphite AAM, reducing the United States’ reliance on China for this critical material.



- Reduce the size of equity raising required to fully fund Vidalia’s Phase 3 expansion, enhancing prospects the project being fully funding and therefore proceeding.
- Reduce Syrah Group’s reliance on commercial project debt, (b) (4)
- Improve financial returns of Vidalia’s Phase 3 expansion, enhancing the prospect that Syrah Group will take a final investment decision on the project. (b) (4)

Syrah has historically evaluated varied financing structures for project development. To date, the company’s funding has been from equity and sub-ordinated convertible note transactions. Since 2012, Syrah has raised approximately \$838 million (A\$1,134 million) of equity and convertible note capital to fund the development of its Balama and Vidalia operations. The capital requirement for Vidalia’s Phase 3 expansion is significant, at approximately \$450 million, when compared to Syrah’s current market capitalization \$550 million (A\$800 million). It would be extremely challenging to structure and successfully complete an equity raising of the size required to fully equity fund Vidalia’s Phase 3 expansion.

(b) (4)

In June 2021, Syrah Technologies applied to US Department of Energy’s Loan Programs Office for an Advanced Technology Vehicles Manufacturing (“ATVM”) loan to fund Vidalia’s Phase 2 expansion with due diligence commencing in July 2021. The Loan Programs Office subsequently undertook detailed market, technical and legal due diligence on Syrah Technologies, Vidalia and Vidalia’s Phase 2 expansion. In April 2022, DOE offered Syrah Technologies a Conditional Commitment for a loan of up to \$107 million. Syrah Group and DOE are focused on completing negotiations and finalizing binding loan agreements in the third quarter of 2022. (b) (4)

(b) (4)

#### **d. Equity Plan**

##### **Economic Impacts**

An Economic Impact Study on Vidalia was completed in September 2021 by Dr Loren Scott, Emeritus Professor of Economics at Louisiana State University. Dr Scott releases the State's Economic Outlook annually in September to advise the Government on threats and opportunities for the State. Dr Scott's study of the Vidalia Phase 1 and Phase 2 facility has significant leverage for Syrah Technologies at the Federal, State, and local level. Assistance is directed to projects aligned with local, state and federal programs.

- State Environmental Projects assessed on a balance of environmental and economic impact. The economic impact assessment influences the assessment of public comment requests.
- State priority is development in rural Louisiana North of the I-10 Corridor and provision of employment above local wage.
- Federal programs are aligned with programs including Domestic Production of Strategic Minerals, Reduction in Greenhouse Gas and its impact on human-induced climate change, and infrastructure improvements (such as barge versus road container traffic).

Some of the Economic Impact Study highlights were that Syrah Technologies is unique as only 1 of 2 projects in rural Louisiana. The Economic Impact Study was released November 22, 2021 following a Total Installed Cost update, which baselined installed capital costs at \$176 million and operating costs for the Vidalia Phase 2 expansion. While a Vidalia Phase 3 expansion Economic Impact Study has not been completed, Syrah Technologies is able to make a reasonable estimate of impact by extrapolating the outcomes of the Economic Impact Study on the Vidalia Phase 2 expansion using our understanding of the factored estimate. Our estimate of economic benefits is based on estimated total installed cost for the Vidalia Phase 3 expansion, annual operations costs, and manning estimates. Currently, our estimates of the ratio for Vidalia Phase 3 to Phase 2 are:

- 2.8 times for installed capital costs;
- 3.2 times the annual operational spend excluding Balama natural graphite feed; and
- 2.2 times for the number of employees.

##### **Economic Effects on the Concordia Parish**

Employment in rural Louisiana peaked in 2008, and new economic development in Louisiana's 29 rural parishes in 2021 was sawmills or solar farms with low wages or low employment, respectively. Locally, the economic analysis indicated construction would increase \$71 million in new earnings for Concordia Parish residents. Total earnings generated (\$42 million) will be larger



than farmworkers and agriculture combined in Concordia Parish. In the year of the highest construction workforce, Syrah Technologies will support more jobs than people presently employed in the manufacturing, construction, agricultural, and finance sectors combined in Concordia Parish. During Vidalia Phase 2 operations, Syrah Technologies creates a 3.9 jobs multiplier, meaning for every new job created at the site, there are 2.9 jobs created elsewhere for Concordia Parish. This implies that the average wage of all the jobs (including the indirect, multiplier jobs) created by Syrah's operations in 2024 is \$52,961 – some 37% higher than the average wage today in Concordia Parish. This is another indicator that Syrah is bringing both more and higher paying jobs to the Parish in Phase 1 & 2. For Phase 1 & 2, \$1.83 million into local treasuries is expected annually.

Construction economic impacts in the Parish for Vidalia Phase 3 were estimated. The effect of construction is expected to create over \$199 million in new earnings for Parish residents. Phase 3 new revenues for Concordia Parish during construction are \$9 million.

Ongoing year on year operational effects in Concordia Parish for Phase 3 from 2026 were also estimated. For Phase 3 it is realistic that the average wage will remain 37% above the average Parish wage. Operational spend in the United States for Phase 3 is estimated at \$86 million per year. It is estimated that \$99.2 million in business sales in Concordia Parish and \$39.9 million in household earnings. As a reference point, this amount is more than 2.5 times all farm proprietor's income in Concordia Parish in 2019 (latest available). It is expected that the jobs multiplier will remain unchanged at 3.9.

### **Economic Effects in the State**

The spend in Vidalia Phases 1 & 2 will create over \$340 million in new business in the state and \$117 million in new earnings for state citizens. It is anticipated that \$8.22 million in new revenues for State treasury in construction and \$5.9 million in revenues while in mature operation annually. The state job multiplier is 7.0 times, meaning every job creates 6.0 jobs elsewhere in Louisiana.

Construction economic impacts in the State of Louisiana for Vidalia Phase 3 were estimated. The effect of construction is estimated at \$952 million in new sales at businesses in Louisiana and \$23 million in new revenues.

Economic Impact for phase 3 was estimated for the State. The job multiplier for the state is expected unchanged at 7.0 times. \$16.9 million in new monies for State Treasury is estimated.

### **Workforce**

The Vidalia Phase 3 workforce strategy includes a transition to final Vidalia Phase 2 steady state whilst also addressing the needs during construction and commissioning of interface and collaboration in a normal brownfield project. It also accounts for support to product development R&D and Vidalia Phase 3 development.

Syrah Technologies' recruitment efforts are increasing in 2022 in readiness for Phase 2 operations commencing in 2023. We expect that Vidalia's direct workforce excluding contractors will ultimately increase to 212 FTEs with Phase 3 operational readiness recruitment planned from 2025.

## **Diversity and Inclusion**

Syrah Group has a Division & Inclusion Policy to support the Syrah Group's commitment to achieving and maintaining a diverse and inclusive workforce, at all levels of the organization, that is representative of the communities and markets in which it operates. This policy applies to all Syrah Group employees and entities, and extends to embedded consultants and representatives of Syrah Group.

Syrah Group has implemented both quantitative and qualitative initiatives to drive the Company's diversity and inclusion efforts. Diversity performance (e.g. gender diversity and pay, pay equality, local employment, average training hours) is measured and reported to the Executive Committee and Board of Directors, as well as publicly in sustainability reports, on a regular basis.

We remain committed to providing a safe and inclusive work environment for all our employees. Accordingly, Syrah Group keeps an open mind to its recruitment and selection processes and strongly encourages people from all different backgrounds to apply for a role with us. Flexible working options are available to ensure we reach the widest pool of talent possible.

The Climate and Economic Justice Screening Tool identifies Vidalia site's location in Concordia Parish, Louisiana as disadvantaged in the categories of clean energy and energy efficiency, health burdens and workforce development. Accordingly, Syrah Technologies' believes that DOE funding of Vidalia's Phase 3 expansion is consistent with the Justice40 Initiative and will benefit disadvantage communities by creating good-paying, safe jobs within a domestic supply chain for AAM manufacturing.

(b) (4)

. Our exposure to the electric vehicle market (and decarbonization in general), customer engagement (e.g. Tesla and other tier 1 customers), association with the DOE, association with laboratories and universities including Louisiana State University, our strong corporate value proposition, and our reputation as an employer offering relatively well paid roles are expected to contribute to Syrah Technologies' ability to attract a skilled labor force to Vidalia.

## **2. Technical Description, Innovation, and Impact**

### **a. Relevance and Outcomes**

The Vidalia Phase 2 operation is designed to produce 11,250tpa of (b) (4) ("CLP18") graphite anode material by processing natural graphite flake from Balama. The



Vidalia Phase 2 facility will also produce other lower value products, such as fines by-product. The process plant work breakdown structure for the Vidalia Phase 2 facility is as follows:

**Area 320: Spheroidization & Classification:**

Responsible for modifying particle size distribution and particle shape of the received graphite flake concentrate. (b) (4)

[REDACTED]

[REDACTED]. Mills operate with a continuous feed and discharge.

**Area 340: Purification:**

Responsible for removing gangue minerals from the chemically impure USG. (b) (4)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**Area 350: Product Drying:**

Responsible for removing residual moisture from the PSG prior to coating and carbonization.

(b) (4)

The

dry solids are referred to as PSG at this stage in the process and have a purity of >99.95% TC.

#### Area 370: Waste Neutralization:

Responsible for neutralizing all acidic discharge streams from the plant, (b) (4)

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#### Area 380: Reagents:

(b) (4)

(b) (4)

#### Area 390: Utilities & Services:

Utilities that are required to operate the Vidalia facility are raw/potable water, reverse osmosis (RO) purified water, nitrogen gas, natural gas and compressed air.

#### Area 400: Coating, Carbonization, Screening & Magnetic Separation:

Responsible for coating PSG with (b) (4) pitch and then carbonizing the pitch onto the surface of PSG (b) (4) to produce a saleable natural graphite AAM, referred to as (b) (4) ("CLP") product.


(b) (4)

(b) (4)


(b) (4)



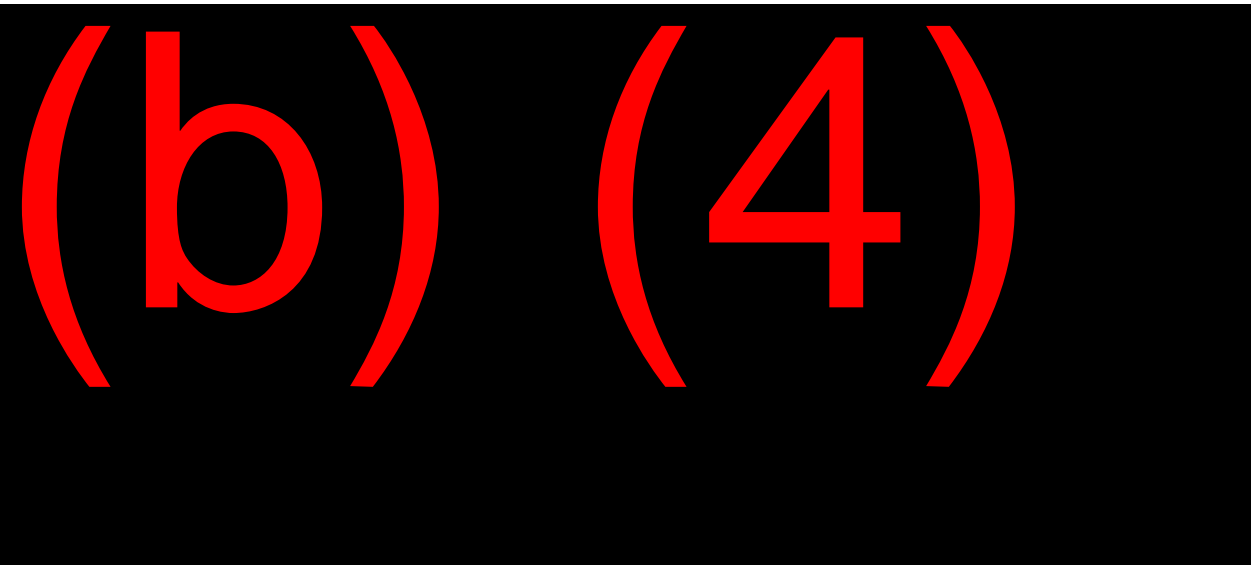
(b) (4)

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The carbonization process takes place in furnaces operating in parallel. Coated PSG is loaded into crucibles/saggars, which are transferred into the furnace. (b) (4)

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(b) (4)

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In February 2022, Syrah Group completed a scoping study of the Vidalia Phase 3 facility to better understand the economics of a Phase 3 expansion. (b) (4)

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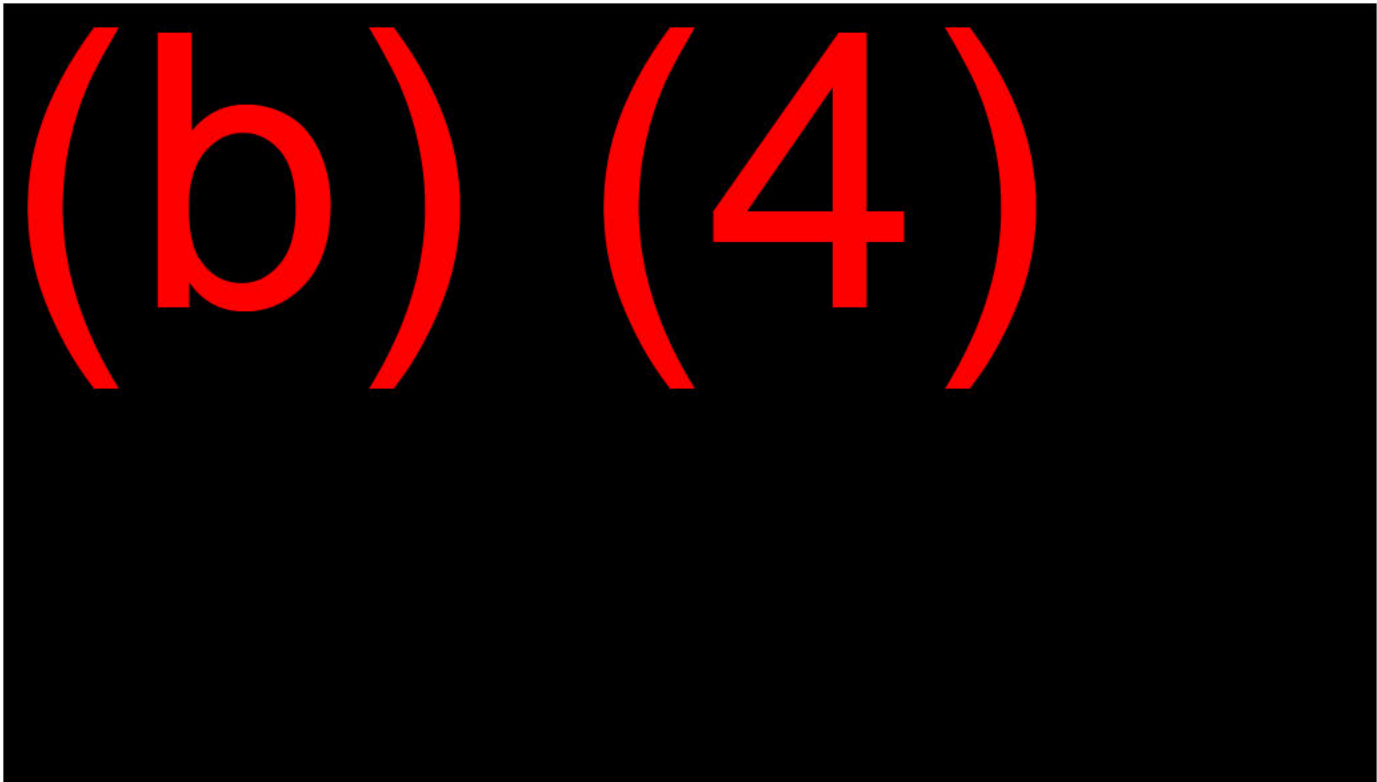
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(b) (4)

The Vidalia Phase 3 scoping study developed high-level layouts to inform equipment requirements. Phase 3 layouts considered:

- Phase 2 facility boundary and separation of Phase 3 processing areas.
- Boundary airborne particulate limits during layouts.
- (b) (4)
- Scaling of ancillary infrastructure to house and support primary processing equipment.

(b) (4)

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Syrah Group is completing trade-off studies on the Phase 3 expansion to refine the design basis, plant requirements and layout of the Phase 3 facility to be evaluated in the DFS in the second half of 2022.

## **b. Innovation and Impacts**

### **Spheroidization**

#### **Current State-of-the-Art**

The conventional and widely used technology consists of (b) (4) “milling trains” with a number of milling stages connected in series to make up the train. [REDACTED]

[REDACTED] These systems generate a specific output and to increase capacity, more milling trains need to be added, thus increasing the footprint required. [REDACTED]

[REDACTED] remain the dominant and lowest capital cost option for spheroidization since the inception of the Syrah’s spherical graphite project.

#### **Phase 3 Process**



### **Purification**

#### **Current State-of-the-Art**

Hydrometallurgical purification is currently the most widely used method for spherical graphite purification. Hydrometallurgical purification consists of:

- a. Acid-base: an alkali fusion of sodium hydroxide (NaOH) method where impurities react with NaOH under high temperature, produce water-insoluble hydroxides. Then through lixiviation with various compositions and concentrations of HCl, HF and H<sub>2</sub>SO<sub>4</sub> solution, soluble chlorides are formed. These compounds are washed out with water and then removed.

- Standard acid purification of spherical graphite requires considerable environmental, safety, and cost management. Environmental concerns have been driven by Chinese operating practices where high volumes of untreated fluoride-containing acidic wastes have been discharged to the environment. Syrah Technologies has addressed these issues by developing a modified acid leach process for Phase 2 established through a comprehensive bench and pilot test work program. Syrah Technologies' single-source and consistent feed material, more efficient leaching configuration and alternate methods (b) (4) reduced production costs and waste volumes generated, while meeting or exceeding product purity specifications.

<p>Syrah</p>	<p>(b) (4)</p>
<p>[REDACTED]</p>	<p>[REDACTED]</p>
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[REDACTED]

(b) (4)

## Current State-of-the-Art

Contains Trade Secrets, Confidential, Proprietary, or  
Privileged Information Exempt from Public Disclosure

are rotary dryers and flash dryers. The drying process is not chemically altering and therefore the equipment selection does not impact the final product quality if moisture targets are met.

### **Phase 3 Process**

(b) (4)  
[Redacted text block]

### **Pitch Selection**

#### **Current State-of-the-Art**

(b) (4)  
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#### **Phase 3 Process**

(b) (4)  
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#### **Current State-of-the-Art**

(b) (4)  
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#### **Phase 3 Process**

(b) (4)  
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### **Carbonization**



### Current State-of-the-Art

Heat treating of the coated PSG is typically done in a furnace at temperatures of (b) (4) which results in carbon-coated anode material with a core-shell structure of graphite. The surface of the graphite is uniformly coated with amorphous carbon.

### Phase 3 Process

(b) (4)

#### c. Technical Feasibility of Vidalia

Over the last five years, Syrah Group has been developing and testing its process and equipment technology to produce AAM, starting with bench and pilot scale operations in Perth, Australia and China and progressing to its fully operational Phase 1 integrated commercial scale qualification facility at Vidalia, commencing development in the USA in 2018. The Phase 1 facility is a product qualification facility that uses all the necessary commercial-grade equipment to process natural flake graphite into saleable, on-specification AAM. Syrah Group's technical expertise has and is being developed via industrial scale production campaigns of Phase 1 and systematic in-house/outsourced laboratory testing of Phase 1 USG, PSG and CLP products, allowing for optimization of technology and upskilling of employees. Syrah Group aspires to become a leading expert in AAM applications for lithium-ion batteries in the electric vehicle industry and to exceed customer requirements via iterative development.

The primary objective of the Phase 1 facility at Vidalia is to produce on-specification AAM for customer qualification. A secondary objective is to deeply understand production processes for process optimization, equipment selection/optimization, product development and QA/QC. Milling campaigns target parameters such as yield, tap density, throughput and particle size distribution. Purification campaigns process USG over multiple campaigns or batches. Coating/carbonization campaigns provide insights into heating profiles and battery performance of CLP.

To evaluate the performance of Phase 1 AAM, Syrah Technologies' in-house laboratory characterizes routine samples for the typical certificate of analysis ("COA") suite and selected samples are further tested by independent partner labs in the USA, including via established partnerships with local universities, as well as by target customers. (b) (4)

- (b) (4) [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Multiple auto and cell manufacturing target customers have analyzed test results and conducted their own physical and electrochemical testing on Vidalia AAM. Technical engagement with target customers has been interactive and iterative, with Syrah Technologies' gathering intelligence through customer requirements and optimizing its product from Vidalia. Positive outcomes in testing and qualification have underpinned progression in technical and commercial engagement with target customers and culminated in an offtake agreement being executed for the Vidalia Phase 2 facility.

#### Yield

(b) (4) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

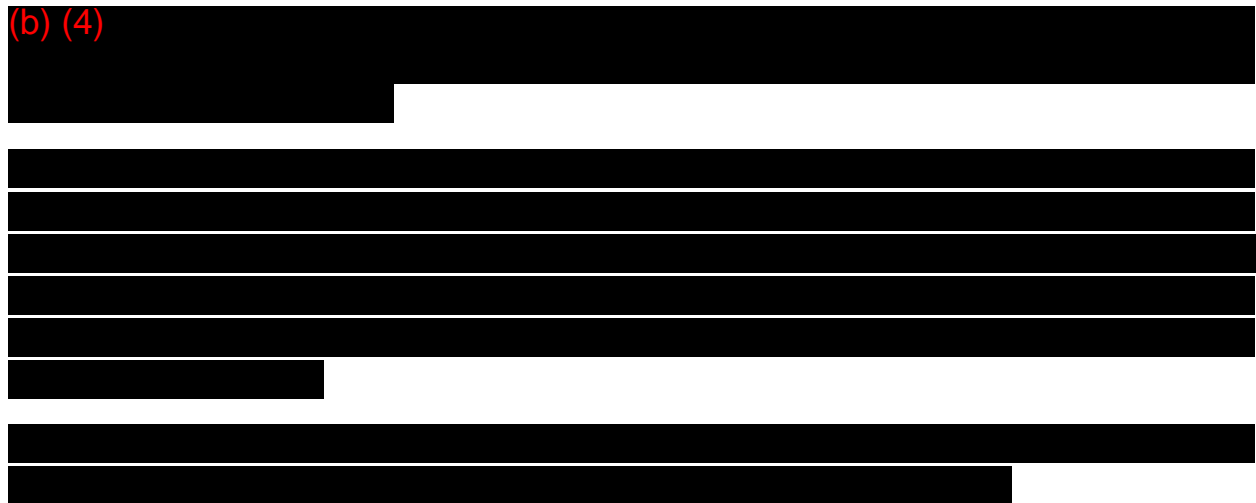
Limited information is available on yields of competitors due to the high level of confidentiality in the industry, particularly in China. Different natural graphite feedstock perform differently. Anecdotal information gathered via visits of Syrah Group personnel to China suggests that yields for Chinese natural graphite is typically in the (b) (4) range. [REDACTED]

#### Milling

The milling process transforms the graphite flake into spherical graphite. It is understood (b) (4)

[REDACTED]

(b) (4)






(b) (4)



### Purification

Vidalia's purification flowsheet was developed entirely by Syrah Group through bench and pilot scale test work carried out in Australia. The flowsheet was further proved in Phase 1 operations through a series of qualification campaigns. The key parameters targeted during purification are purity, elemental composition for impurities, ash, and moisture. Syrah Group targets a purification purity of >99.95% TC irrespective of product size, which is maintained across the subsequent process stages and aligns with industry expectations.

(b) (4)



. The purification product is dried in conventional ovens in the Phase 1 facility, however,  will be adopted for Phase 2 and 3. The dried product is PSG.

  
 The impurities in the product can impact the electrochemical performance by causing side reactions that deplete lithium within the cell. Impurities provide a potential source

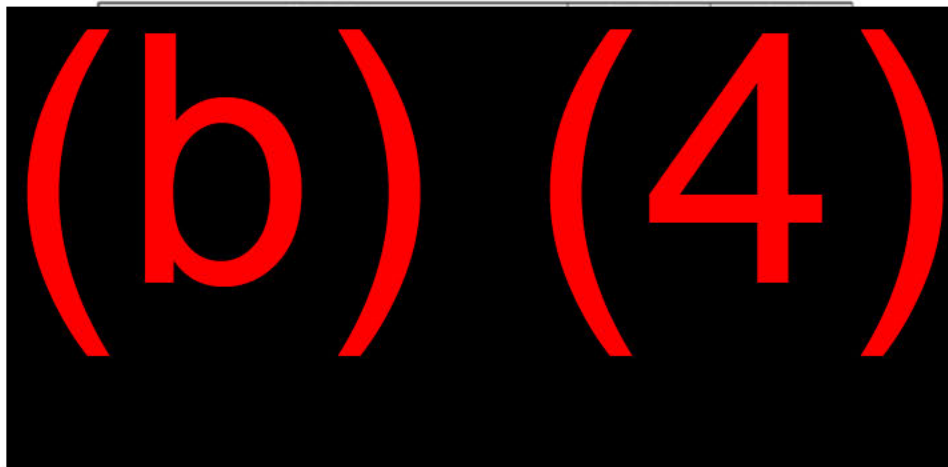


for dendrites to nucleate. As dendrites grow, they are known to potentially pierce the battery separator, causing a short. Large and particularly elongated foreign particles can puncture the separator during cell construction or cycling. Further, small impurities are likely to increase unwanted side reactions between the electrolyte, depleting lithium and reducing the cell's reversible capacity. A sample

SEM-EDS image from Phase 1 PSG is shown in Figure 9



A comparison of the PSG specification and COA of PSG from a Phase 1 purification campaign is shown in Figure 10 and Figure 11, respectively.



(b) (4)

#### Coating and Thermal Treatment

The coating process covers PSG with [REDACTED] carbon (b) (4)

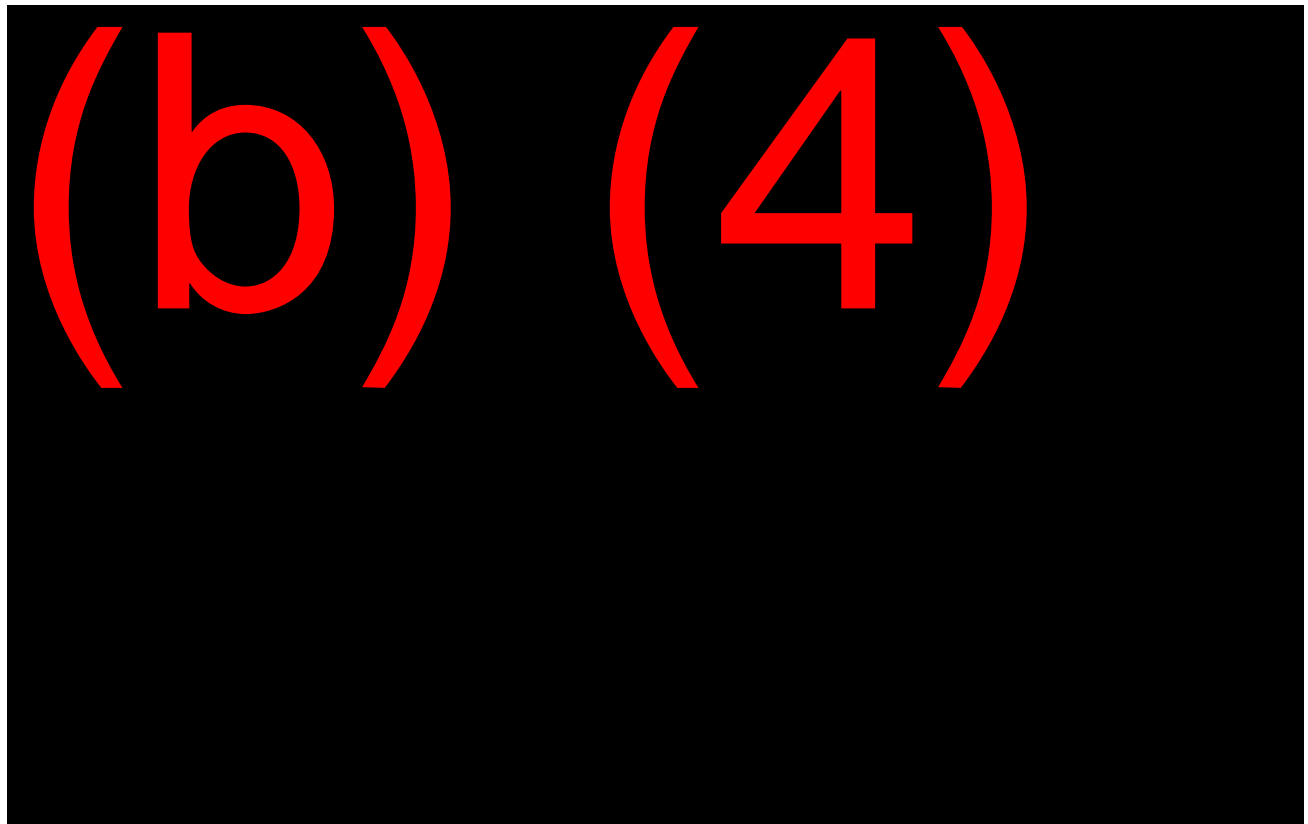
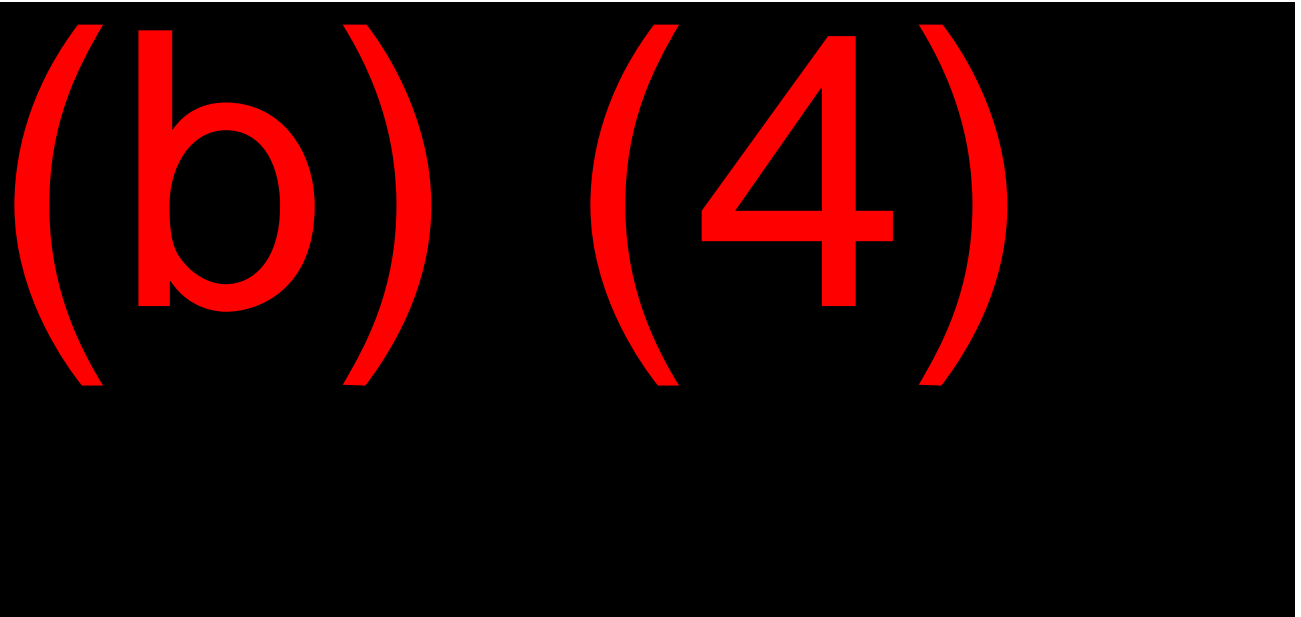
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(b) (4) The final CLP product is then analyzed for particle size distribution, purity, surface area, tap density and electro-chemistry (battery performance). CLP is required to meet Syrah Technologies' specifications before it is deemed saleable. A comparison of the final CLP18 specification and a COA of a typical saleable product from Phase 1 is shown at Figure 12 and Figure 13, respectively.



(b) (4)

(b) (4)

on direct customer feedback, performance of its product in half-cell testing meets or exceeds standard EV industry performance requirements for AAM.

The technical outcomes of the Phase 3 expansion project are:

- Produce at least 45,000tpa AAM.
- Continuously satisfy specifications mutually agreed with customers, via implemented QA/QC procedures, so that Vidalia AAM can be consumed in customers' downstream manufacturing processes.
- Achieve competitive operating costs to alternative AAM products imported into the USA.
- Operate in a safe and environmentally responsible way.
- Optimise AAM products and develop new anode products based on market evolution and customer feedback leveraging in-house capabilities and partnership with 3<sup>rd</sup> party technology companies.

### **3. Workplan and Market Transformation Plan**

#### **a. Workplan for Vidalia Phase 3 Project**

##### **Project Objective**

The project objective is the engineering, permitting, procurement, construction and commissioning of the Phase 3 expansion of the Vidalia natural graphite AAM facility to a



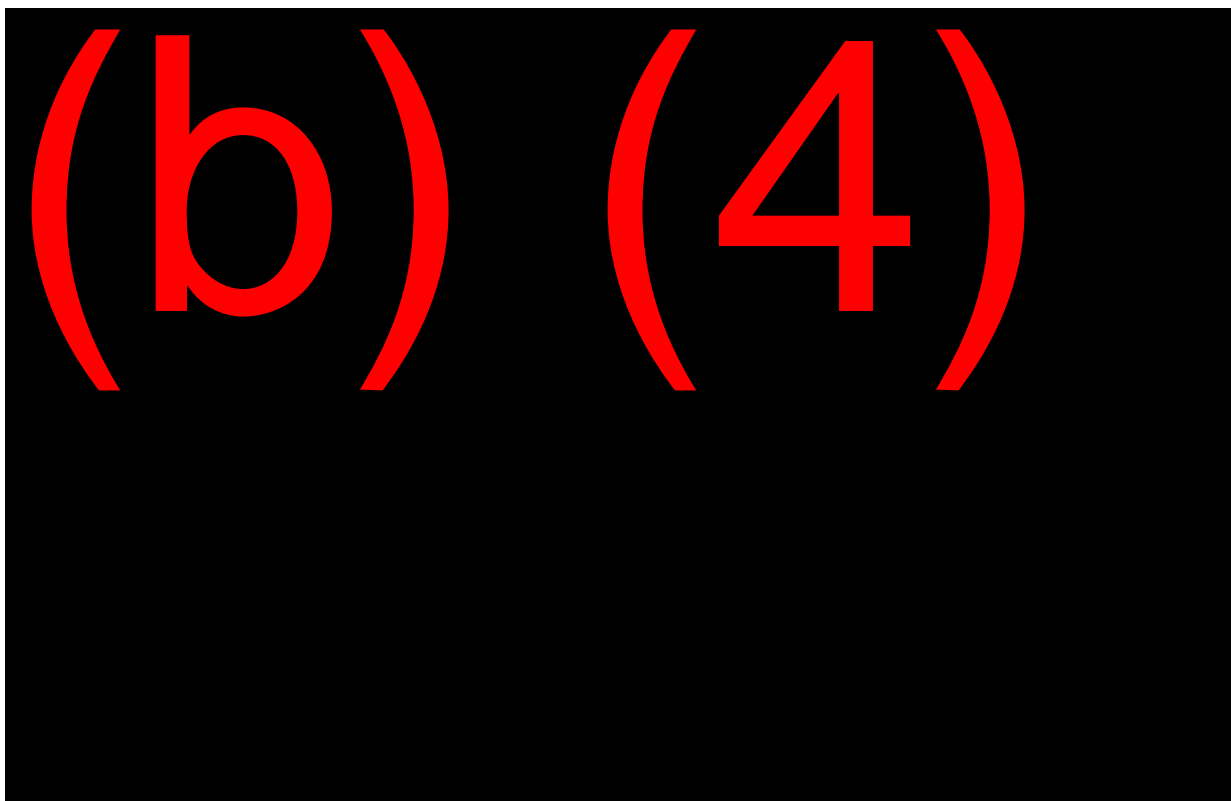
production capacity of at least 45,000tpa AAM. The expansion will improve production efficiency in all areas including milling, purification, and coating versus Syrah's proposed Phase 2 facility. The Phase 3 Vidalia facility will produce on-specification AAM products for the US battery manufacturing supply, at a commercially reasonable profitability margin and financial return to Syrah Technologies, while operating in an environmentally responsible way.

### **Technical Scope Summary**

The overall work scope for the Phase 3 expansion project is scheduled to be completed over approximately 48 months from July 2022, subject to internal approvals (i.e. "go" decisions) not delaying sequential progression between performance periods. The work scope is divided broadly into three, gated and sequential periods of performance and budget.

- **Performance period 1** (b) (4) Definitive Feasibility Study and Detailed Engineering Transition
- **Performance period 2** ): Detailed Engineering, Procurement and Final Investment Decision Preparation
- **Performance period 3** Construction, Commissioning and Start of Production

This work scope, milestones, go/no-go decision points and ultimate milestone of the Phase 3 expansion project are shown in Figure 15. Light green rows highlight go/no go decision points within and at the end of each performance period.



## **WBS and Task Description Summary**

### **Definitive Feasibility Study (DFS)**

Syrah Group's operations and technical teams have defined scope of Services for a Definitive Feasibility Study. The objective of the DFS is to delineate the project scope, confirm the necessary stages in the execution schedule, and provide overall project economics to Syrah Group's board.

The DFS will permit consideration by the Syrah Group Board in making a stage gate approval for the next phase which includes detailed engineering and investment in early commitments to maintain a cascaded continuous schedule.

The guiding principles of the DFS are:

1. Replication of the Phase 2 design and engineering approach, as a preference, unless there are significant and provable HSE, product QC, operating cost and/or capital cost benefits.
2. Incorporation of novel equipment with associated unproven reliability is to be avoided.
3. Overall plant reliability and resilience in design and equipment, is necessary to sustaining designed production levels. Equipment performance must be proven and robust.
4. Incorporation of Phase 2 lessons learned in design engineering, equipment selection, procurement, and project management & governance.

The scope of services includes the following:

- Project management, with weekly progress meetings reviewing progress, and key targets for following week.
- Fortnightly progress reports by close of business every Tuesday, (covering the previous periods work) for the duration of this project.
- Reports to include; deliverables status report, delays and recovery plan, issues and concerns, technical queries register, 3 week look-ahead. And forecast to complete schedule.
- Project will proceed with Process Design generally in accordance with the Phase 2 know-how, and the Syrah determinations as in Equipment Sizing basis.
- Basic engineering level 3D modelling and layouts, building upon knowledge from Phase 2 design.
- HAZOPs and risk register.
- Design reviews.
- Procurement services costs for execution of the Phase 3 expansion project.
- Construction Management services costs.  
Capex and cost estimate to the required DFS accuracy (stated as -5% plus 20%).
- Cost estimate review.
- Final Report of the DFS and Total Installed Cost (TIC) report.

- Additional Bid Package / Scope for a Detail Engineering Bid Scope Of Work.

Scope of services excluded from the engineering service provider in DFS and is the responsibility of Syrah Group's owners team:

- Land purchase, geotechnical assessment, topographical/ hydrological and ground condition reports.
- Environmental/statutory/regulatory approvals and community liaison, including negotiations.
- All permitting and licenses, insurances, duties and taxes, land titles, approvals and royalties.
- Services outside the battery limit (footprint of process plant) including grid power, town water supply, waste services, storm water discharge, gas supply and nitrogen supply package.
- Test work to confirm process parameters and equipment performance.
- Marketing and offtake agreements.
- Foreign exchange rates.
- Development of owner's costs including operating costs.

The DFS will incorporate the owner's requirements and be an integrated facility with Vidalia's Phase 2 facility currently being constructed.

The process design will be based on Syrah Technologies' provided designs.

(b) (4)

The DFS capital cost estimate will have a blend of Class 3 and Class 2 classification and accuracy, suitable for the project phase of DFS as shown below in table from the AACE International Recommended Practice No. 18R-97.

The necessary Cost Estimate Accuracy [Class 2/3] is required to be within the range of -5% to +20% for budget authorization and bidding/tendering.

(b) (4)

### Application for Environmental Permit

The Emissions and Effluent Scope from the DFS will inform the Application for Approval of Emissions of Air Pollutants from the Louisiana Department of Environmental Quality Office of Environmental Services Air Permits Division. Providence Engineering and Environmental Group LLC (“Providence”) will submit on behalf of Syrah Technologies, the Vidalia site air permit application package for Vidalia’s Phase 3 facility. (b) (4)

### Long Lead Items (“LLI”), Major Specifications, and Procurement

The intention of LLI Gate Approval is to maintain progress on the critical path and avoid delays in execution, The DFS will progress the plant design to a sufficient level to allow procurement of critical long-lead equipment progresses concurrently while seeking approvals of detailed design engineering. The DFS will define key LLI such as (b) (4). For the major long lead equipment packages, this requires the release of early vendor engineering to feed the critical path engineering activities with vital vendor data.

The funds requested at this gate will be against the maximum financial commitment that can be expected prior to full funding.

### Detailed Engineering

The Engineering Service Provider will provide engineering services and procurement support for the Phase 3 expansion project. The scope of work will be Early works, Inside Battery Limits includes Process Areas, and Services and Utilities.

The Engineering Work Areas are:

- EWA 100 Early Works
- EWA 300 Buildings
- EWA 301A/B/C Power Controls/Distribution
- EWA 303 Interbattery
- EWA 320 Milling
- EWA 340 Chemical Treatment
- EWA 390 Utilities
- EWA 400 Carbonization

For Each of the Engineering Work Packages (“EWA”), the relevant Civil, Concrete, Electrical, Mechanical, Piping, Instrument, Paint, and Insulation groups are detailed.

As part of the Detailed Engineering Scope, the capital cost estimate developed in the DFS will be further refined with a TIC update. After freezing the P&ID, estimating deliverables will be



organized by these EWA's and the estimators disciplines. The estimators will confirm the Project Budget to a Class 2 estimate with +/- 10% accuracy.

(b) (4)

#### **Final Investment Decision Preparation and Approval**

Syrah Technologies' project owner's team will prepare the Final Investment Decision ("FID") document. This FID document presents an update of the progress of detail engineering, including a full review of project technology, project definition and readiness, TIC, volume and operating and capital costs. In conjunction with separate customer contract and financial analysis, this documents requests approval for full funding to proceed to construction. Approval to proceed is assessed by the Syrah Resources Limited Board of Directors, across sustainability, market, operations, and economic objectives.

#### **Construction**

The Construction Management Organization will be a blend of experienced Syrah personnel and experienced Worley Construction professionals to ensure a team balance that controls the following:

- Safety Performance - Zero Harm is the overriding target.
- Contractual accountability, avoidance of Claims and Variations.
- Efficiency of activities/operation in the field, so progress is steady and well planned.
- Experience and knowledge of construction and installation of similar equipment, from the building of the Pilot Plant.

Similar to replication of the Phase 2 design, the implementation plan for construction will be largely repeated for Phase 3. The overall Phase 3 construction scope is to be executed as site temporary facility construction, site preparation, and pilings/undergrounds/foundations. Once foundations are complete the erection of the pre-engineered buildings can begin along with

setting equipment and structural steel. A modular/pre-assembly approach will be developed to put as many construction hours offsite as possible. The milling and carbonization buildings are to be erected as soon as possible to act as both as a storage facility and a covered work area for installation of those operating systems. Upon installation of structural elements, specific buildings and equipment, each area will progress through construction by discipline starting with mechanical followed by E&I and then painting and insulation.

#### EWA 100 Early Works

The site area delineated as new construction areas will be prepared. The clearing, grubbed and grading of the site to form proper surface gravity drainage throughout to existing swale ditches which drain away stormwater runoff from the site has been largely completed with Phase 2. There is no formal underground stormwater sewer system in the scope, stormwater will gravity drain across the surface. The Phase 3 340 Area having chemicals and potential oil sheen sources will be contained in dikes which have independent sumps and pumps that can be sampled and pumped out to a proper location. All new roadways and building roofs will be designed for routing of stormwater to proper drainage avoiding formations of pools and ponding and interference with Phase 2. Once the site is prepared, undergrounds, pilings, and foundations are to be installed. The strategy of the project remains to minimize underground installations. New firewater lines, and sanitary sewer systems are the primary underground services.

(b) (4)

Spread footings will be used wherever possible to minimize pilings. A common piling diameter will be used for efficiency on site. Foundation work is sequenced for erection of buildings, arrival of modular/preassembly items, and to provide clean safe work areas free of mud during construction. Phase 3 will be implemented

#### EWA 300 Buildings

Key buildings will be milling buildings, furnace building, and extension to office spaces. Similar to Phase 2, all buildings expected to be based on design-build fixed price packages from contractors.

#### EWA 301A/B/C Power Controls/Distribution

Electrical and Instrument distribution centers are preassembled buildings provided by vendors which come loaded with pre-wired equipment. They will be set on elevated steel supports and located on the Site to minimize cable/tray/conduit runs. Dedicated milling power distribution building are scoped due to load and location. Transformers adjacent will incorporate the instrument RIE (Remote Instrument Enclosure) Rack Room.

#### EWA 320 Milling

The milling systems will have local power distribution panels in the Milling building to reduce the size of the PDC and reduce the number of cables required from the PDC to the field. The (b) (4). Once unloaded, the crates are opened and assembly of all the individual components is made inside the Milling building. Mill sets are bolted directly to the floor without need for foundations. There is a large scope component of electrical and instrument connections for each mill set. Storage bins and hoppers are also installed in the milling building with interconnecting piping installed above grade. Most of the work above grade in the Milling building is to be done with man-lifts with a minimum of scaffolding use. The Work area is 100% indoor work with the exception of the fans and stacks for the Mill Set Baghouse Fines exhaust.

#### EWA 303 Interbattery

All interconnecting pipe racks and cable trays throughout the facility are part of EWA 303. The main pipe rack will be fabricated in a modular design with all pipes installed and ready for interconnects. The pipe rack sections will be shipped via truck and set by cranes. Other pipe racks will be stick built on site as per the plan. Cable tray and wire pulls will be installed after the pipe is installed on the lower tiers.

#### EWA 340 Chemical Treatment

(b) (4)  
(b) (4) The foundations and dikes will be installed first followed by equipment and support steel. Some structural sections were identified to be preassembled and built adjacent to the structure at grade and set in place to eliminate elevated work. (b) (4) The area is spread out well allowing for higher craft density and overhead work from steel structure decks. Piping in this area is primarily bolt up lined pipe requiring fewer field welds and NDE. This area does contain most of the alloy piping and materials so any specialty welding and NDE will be done here. The work area is 100% outdoor work.

#### EWA 390 Utilities

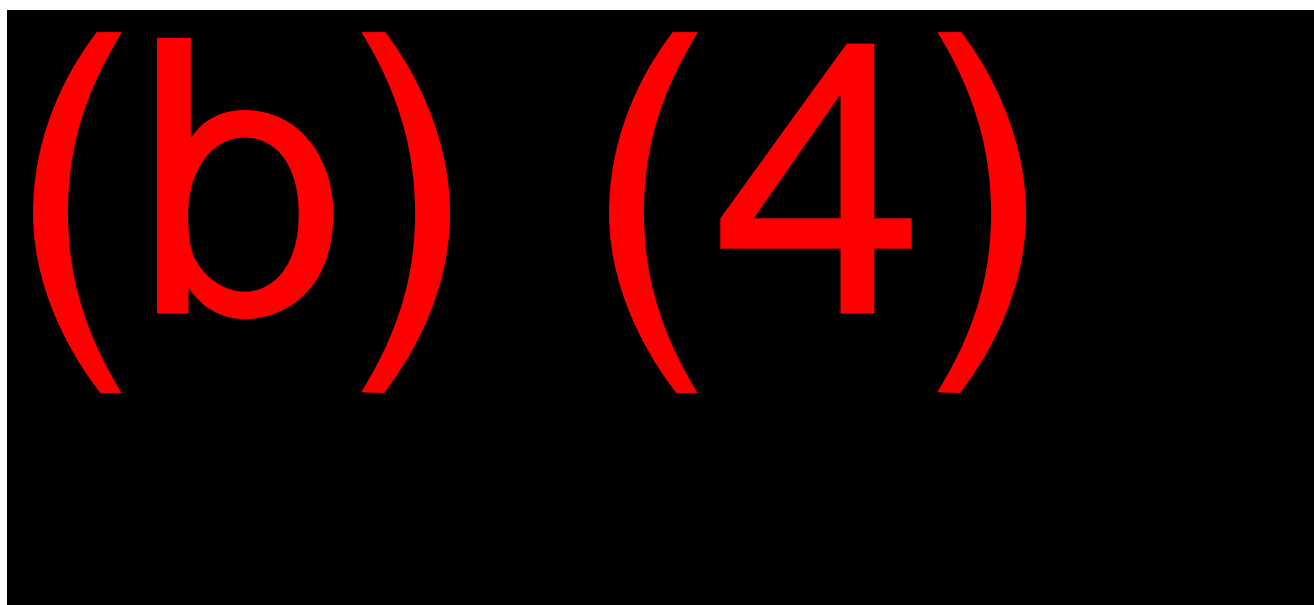
The Utilities area comprises of many package units such as (b) (4)  
(b) (4)  
(b) (4) These are designed as "plug and play" to facilitate minimum on-site construction hours. (b) (4)  
(b) (4). The Engineering Service Provider will make all the interconnects to/from the nitrogen facility at its battery limits. Included in this area also is the electrical equipment needed for the power supply for the (b) (4)  
(b) (4)  
(b) (4)

#### EWA 400 Carbonization



**Project Schedule, Milestones, Go/No-Go Decision Points and End of Project Goal**

The consolidated expansion and operation schedule for Vidalia's Phase 3 facility is at Figure 18. A detailed schedule and evaluation of the critical path for Vidalia's Phase 3 expansion will be developed with the DFS and refined in detailed engineering.



*Figure 18: Vidalia Phase 3 schedule.*

Go/no-go decision points in project are:

- **Approval to commence DFS:** Approval to proceed with DFS with guiding principles of design and to the award of, and commitment to incur costs associated with, a services contract to a 3<sup>rd</sup> party engineering firm to complete a DFS alongside the Syrah Group study team.

- **Approval of Transition to Detailed Engineering and Installed Cost Assessment:** Approval to transition from DFS to detailed engineering design and to the award of, and commitment to incur costs associated with, a services contract to a 3<sup>rd</sup> party engineering firm to complete such work program alongside the Syrah Group's owners' team.
- **Final Investment Decision approval:** Syrah Technologies' project owners' team will put a Final Investment Decision ("FID") proposal to the Syrah Group Board for approval, documenting progress of detail engineering, including a full review of project technology, project definition and readiness, TIC, volume and operating and capital costs. Together with an evaluation of appropriate binding customer commitments to purchase AAM from the Vidalia Phase 3 facility and binding commitments to fully fund the Phase 3 expansion project, the Board will consider approving Syrah Technologies to proceed with construction of the Phase 3 facility within an overall budget and schedule, which would incorporate a project governance framework.

The end of project goal is to commence serial production of on-specification AAM from the Vidalia Phase 3 facility by (b) (4), assuming all gated approvals are given at all go/no go decision points in the project work plan.

### **Project and Risk Management**

Syrah Group is an experienced organization in concept, design, engineering and construction of complex mineral processing and specialty chemical plants, having successfully executed on project development of the Balama graphite operation in Mozambique and Vidalia Phase 1 qualification facility, as well as being well advanced in the Vidalia Phase 2 expansion project.

The Phase 3 DFS will evaluate the Phase 3 project implementation plan and approach. Syrah Technologies expects that its baseline implementation approach will be a streamlined transition from DFS directly to transition detailed engineering, then to detailed engineering, with the objective of achieved a condensed project scheduled and achievement of the project objective sooner than otherwise would be achieved under alternative project execution approaches.

An integrated approach to engineering, procurement services and construction management ("E-CM") would to the proposed structure to preserve an accelerated project schedule. Under this project management structure, Syrah Technologies owners' team would be supplemented by, and integrated with, personnel from an engineering services provider, to form a combined project management organizational structure. This structure has and is being employed by Syrah Technologies to deliver the Vidalia's Phase 2 expansion project, and for field construction management has proven to be an effective option despite requiring a hands-on approach by Syrah Technologies owners' team. In the Phase 3 expansion project, Syrah would consider an integrated detailed engineering team with owners' team discipline leads working alongside the service provider disciplines. Phase 2 operational learnings incorporated in the design will be facilitated with this integrated structure in design, In the Phase 2 project, Syrah Technologies



has partnered with Worley Group, a global engineering services provider, for the bankable feasibility study, transition engineering, detailed engineering and procurement and construction management. Syrah Technologies would seek bids from several field engineering services providers including Worley Group, for such services for Vidalia's Phase 3 expansion.

The construction and equipment supply contracting structure for Phase 3 would have the overarching objective maintaining fixed price competitive bidding for major sources of total installed cost without lengthening the project schedule. (b) (4)

Prior to fully transition to detailed engineering, Syrah Technologies would fully staff an internal construction management team and establish a governance structure that consists of appropriate accountabilities and reporting policy, supplemented with a Group Risk Management Framework and Risk Management Policy which formally lays out the management details. Key lessons learnt from the Phase 2 expansion team and governance structure will be applied to Phase 3. It is expected that most of Syrah Technologies' construction management team for Phase 2, including Anne Duncan and (b) (4), will transition to the Phase 3 construction management team, bringing recent and relevant experience to project implementation and integration of these activities with a 3<sup>rd</sup> party engineering services firm. The Phase 3 governance structure would largely replicate Syrah Technologies' approach for the Phase 3 expansion, which would incorporate:

- A reporting and escalation hierarchy from the construction management team, senior leadership, SteerCo and to board).
- Syrah Technologies senior leadership accountability for the project.
- Project meetings and reporting structure and frequency to ensure communications are maintained.
- Delegated authorities to approve Phase 3 capital cost items.
- Use of independent 3<sup>rd</sup> parties for internal auditing.
- Risk management framework.

Phase 2 as a continuous operating AAM facility during the construction of the Vidalia Phase 3 facility creates unique opportunities to improve schedule, decrease risk, and improve costs. A

number of handoffs/ interdependencies exist with synergies for sustaining capital, operations readiness, Detailed Engineering exist:

- Master Service Agreements and Terms and Conditions are established for Phase 3 vendors reducing bid cycle, improving productivity, and focusing on costs.
- Opportunity for integrated team members in detailed engineering to transfer to sustaining capital roles on commissioning and ramp-up. Typically, they will direct a rapid response team to complete punch list items or modifications as necessary.
- Master Data from Phase 3 equipment to be catalogued by Syrah's Phase 2 Mechanical and Electrical Planners for Phase 3.
- Opportunity for integrated team members in construction to transfer to roles in operations / maintenance.
- Phase 2 operations team to participate in Phase 3 HAZOPS to strengthen safety.
- Phase 2 provides on-the-job training for Phase 3 new recruits.
- Tie-ins to Phase 2 systems are planned so that production impact is minimal

(b) (4) Document Management Software will be used to identify the documents to be handed from Construction to Commissioning and Commissioning to Operations. "Systemization"

(b) (4) breakdown is approved by Syrah Technologies first, as all handover packages & testing operations plans will be handed over at the System level and Mechanical Completion Packages at the subsystem level. All tests and related documentation, by law, must be handed over to Syrah Technologies upon satisfactory completion.

Syrah Technologies proposes employing a risk management framework for the Phase 3 expansion project consistent with what it is presently using for the Phase 2 expansion. Process risks are assessed with HAZOPS. HAZOPS will be included in the scope of services for the DFS. Syrah Technologies' has extensive experience with HAZOPS and will contract the facilitator (b) (4)

(b) (4) has consistently provided HAZOP Services to Syrah Technologies for Phase 1 and Phase 2. All HAZOPS are performed at site with the Engineering Service Provider attending site and commencing with a walk through of the current Facility of the Operational Area for the HAZOP. A high-level presentation of the Operational Strategy and 3D Model Walkthrough will occur to increase familiarity. (b) (4) will lead the HAZOP including the use of (b) (4)

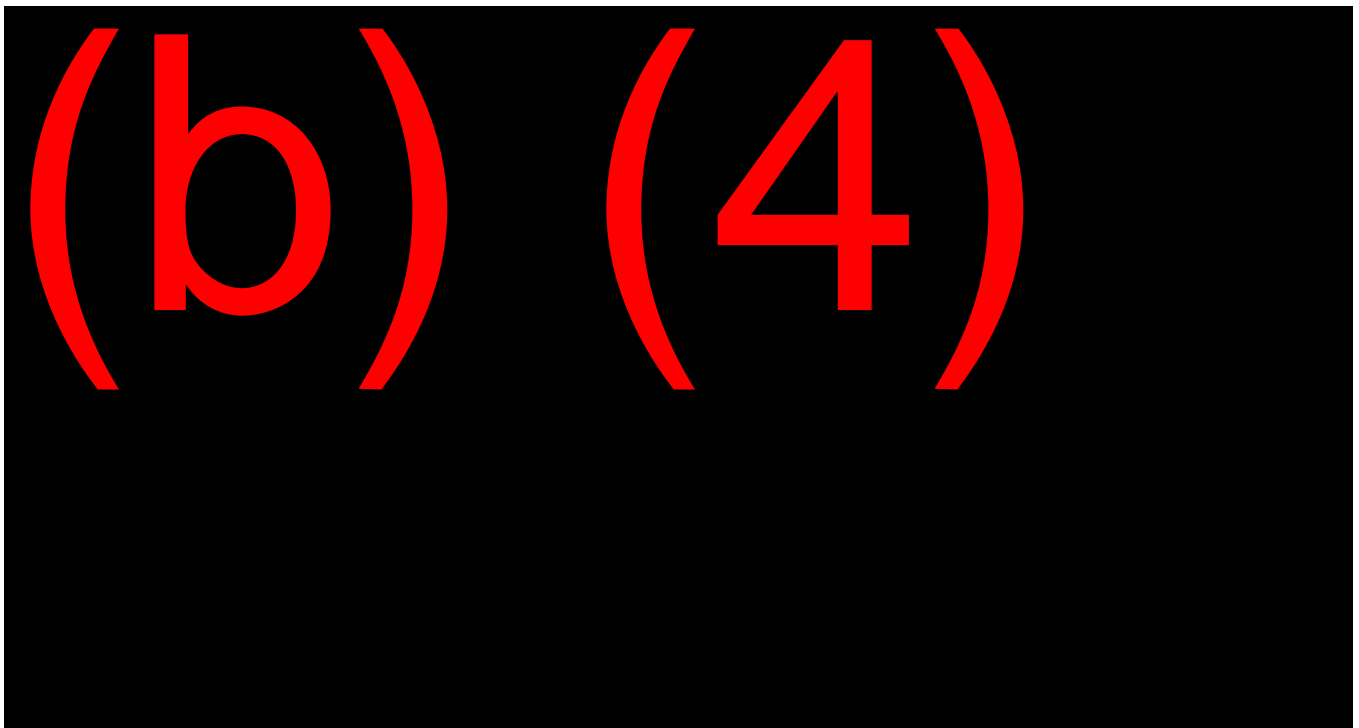
(b) (4)

In addition to managing process risks in design, and overall Risk Management Tool will be used to readily understand the status of Phase 3 risks, provide a summary dashboard of key risk indicators, and provide numerous inbuilt tools to allow for quick filtering and sorting of risks. As with Project Risk matrices, the risk level is obtained by finding the intersection of the consequence with the likelihood.

Risk LEVEL		Consequence				
		Insignificant	Minor	Moderate	Major	Critical
Likelihood	Almost certain	Medium	High	High	Very High	Very High
	Likely	Low	Medium	High	Very High	Very High
	Possible	Low	Medium	Medium	High	Very High
	Unlikely	Low	Low	Medium	High	Very High
	Rare	Low	Low	Medium	Medium	High

Figure 19: Vidalia project risk matrix.

The Phase 2 Project Risk Matrix snapshot from March 2022 gives an example of the tool that will be replicated in Phase 3.



In this example, the risk defined by its ranking after risk treatment has been completed is displayed. (b) (4) External risks such as containerized shipping delays, Impact of COVID in China, weather delays, and global supply chain risks are 4 of the top 5 risks.

Syrah applies change management to deliver a change through a structured process using key tools.

Syrah has a software-based document control system for internal document review and management. The system uses Microsoft Power Automate and includes review and approval stage gates and revision tracking of all project documents, such as reports, test plans, memos, etc. The system is linked to all users in the Syrah network and provides prompting of reviews and approvals via email. This system covers all internal documentation. For external

documentation, which primarily relates to the engineering deliverables, Syrah relies on the engineering services provider's document control system, which is ISO:9001 accredited and works by similar function.

Syrah Group's operations and project teams are based in Vidalia on-site while technical team is based in Australia. Communication is maintained via on-site visits from the technical team, scheduled weekly meetings and frequent messaging. Frequent on-site meeting would occur between the project team and engineering services provider to ensure effective implementation of construction.

### **Buy America Requirements for Infrastructure Projects**

The Phase 3 expansion project will not involve the construction, alteration, and/or repair of publicly owned infrastructure in the United States serving a public function. All existing and proposed infrastructure at Vidalia, including for the Phase 3 expansion, is or will be privately owned and utilized for private use. Accordingly, Syrah Technologies does not believe that the Buy America requirements are applicable for Vidalia and its Phase 3 expansion.

#### **b. Market Transformation Plan**

### **Syrah Technologies' Target Market**

The target market for Syrah Technologies' AAM products is the lithium-ion battery manufacturing market, and specifically the segment that supplies into EV OEMs. Syrah Technologies' target customer base are tier 1 lithium-ion battery and EV manufacturers in the United States. Syrah Group is engaged with more than 10+ target customers for supply of AAM from Vidalia with commercial and technical engagement being well progressed with a narrower group of parties including a Phase 2 binding offtake contract with (b) (4). Letters of commitment from selected target customers have been provided in Syrah Technologies' Full Application. Besides these parties, Syrah is engaged with several additional market participants, which are operating, developing or planning to develop battery manufacturing facilities in North America. Lithium-ion battery manufacturers and auto OEMs have committed to or are planned significant capacity additions in the United States to support the electrification strategies of auto OEMs in the United States and to meet growing consumer demand for EVs.

### **Syrah Technologies' Competitors**

USA-based battery manufacturers and auto OEMs are 100% reliant on Chinese, Japanese and Korean AAM suppliers, with China representing approximately 80% of global AAM supply (70% of global natural graphite AAM supply and 90% synthetic graphite AAM supply). Japanese and Korean AAM suppliers are wholly reliant on China spherical graphite suppliers for feedstock.



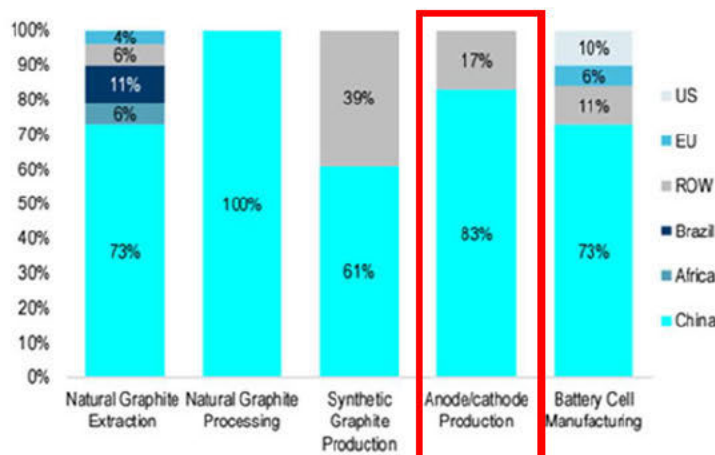


Figure 21: Supply by geographic region. Source: USGS 2021.

AAM supply is highly concentrated by supplier, especially at large-scale, with the five largest market participants supplying >50% of the global AAM market. Major global suppliers of natural and synthetic graphite AAM are:

- BTR: Largest natural and synthetic AAM supplier with a significant and integrated production base in China.
- Zichen / Putailai: Major Chinese AAM supplier with a focus on high quality, low swelling synthetic graphite AAM and strong relationships (b) (4)
- Kaijin: Chinese natural and synthetic AAM supplier, principally focusing (b) (4)
- Shanshan: Major Chinese AAM supplier that is State-owned and has a focus on synthetic graphite AAM on anode side and also cathode active materials.
- XFH: Chinese natural AAM supplier.
- Posco Chemical: Major South Korea AAM supplier with a focus on natural graphite AAM.
- Showa Denko Materials (formerly Hitachi Chemical): Major Japanese synthetic graphite AAM and, to a lesser extent, natural graphite AAM supplier.
- Mitsubishi Chemical: Japanese natural graphite AAM supplier.

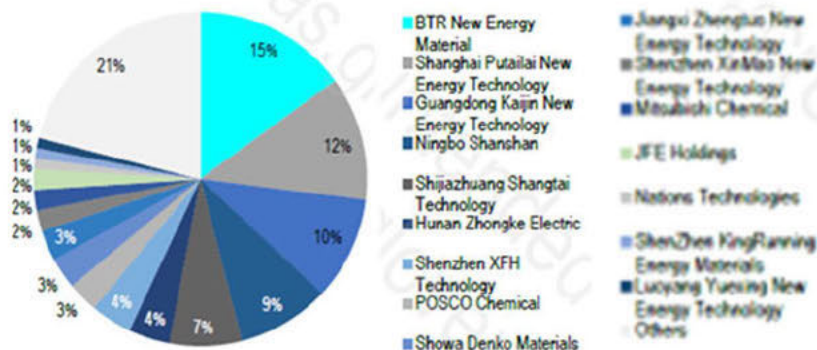




Figure 22: 2021 global market share of AAM for lithium-ion batteries. Source: SPIR and Credit Suisse, April 2022.

(b) (4)



### Barriers to Market Penetration

Customer preferences, and key barriers to mass market penetration, are production scale, price (cost) competitiveness, product quality and battery performance, time for test validation, supply location, reliability and proven technology.

The most significant requirement is the qualification loop that requires commercial scale equipment to be installed and operated prior to final customer commitment. The industry has developed such that cell producers have been able to demand new supply (lines) to begin operation prior to final qualification conditions precedent to contracting volume. New suppliers now need to compete against incumbent supply (mostly Chinese) with large economies of scale, and aggressive pricing against depreciated production capacity investment.

Comments regarding these barriers and mitigation for Syrah Technologies is shown in Figure 23.

Customer preference / barrier		Syrah mitigation
<b>Production scale</b>	<ul style="list-style-type: none"> <li>Customers require a minimum AAM volume from a AAM production line to meet requirements from a single battery manufacturing facility.</li> </ul>	<ul style="list-style-type: none"> <li>Vidalia's Phase 3 expansion capacity will solely meet AAM requirements of battery manufacturing facilities with capacity up to and exceeding 50GWh per annum, which represents covers the scale of most of development in the USA.</li> </ul>
<b>Price (cost) competitive-ness</b>	<ul style="list-style-type: none"> <li>AAM price must be competitive with incumbent AAM sourced from Asia on a delivered basis at customer location.</li> </ul>	<ul style="list-style-type: none"> <li>Vidalia's Phase 2, and Phase 3, operating costs will be competitive to leading Asian AAM supply landed in the United States.</li> <li>Vidalia benefits from <b>vertical integration</b> with Balama (i.e. competitive cost of feedstock), lower delivery lead times, reduced inventory costs and no tariffs.</li> </ul>

<b>Product quality</b>	<ul style="list-style-type: none"> <li>Product quality from new AAM projects subject to rigorous customer qualification.</li> <li>Physical and electrochemical performance must meet specifications within narrow ranges.</li> <li>For new suppliers to the market, specifications must be customized via interactive and long (up to 18 months) qualification procedures between supplier and customer.</li> </ul>	<ul style="list-style-type: none"> <li>Vidalia uses proven processes and technology already utilized in the global battery anode supply chain.</li> <li>Syrah Technologies has a first mover advantage with its AAM having already (b) (4) of iterative testing and qualification with tier 1 customers with positive results.</li> <li>Vidalia AAM performance is equivalent or superior to leading AAM products.</li> <li>Balama natural graphite products have been qualified by customers and is a preferred feedstock for tier 1 AAM and anode precursor producers.</li> </ul>
<b>Supply location and reliability</b>	<ul style="list-style-type: none"> <li>Supply chain targeting regionally localized battery raw material to reduce supply risks and ensure continuity in supply.</li> </ul>	<ul style="list-style-type: none"> <li>Vidalia represents the first large-scale natural graphite AAM supply alternative for US market.</li> <li>Vertical integration with globally significant Balama operation and Balama's full year production (Chinese supply is seasonal) mitigate Vidalia supply risks.</li> </ul>
<b>ESG</b>	<ul style="list-style-type: none"> <li>Customers seeking full chain auditability and verifiable ESG outcomes (i.e. low greenhouse gas emissions ("GHG"), high social/community impacts) to underpin products' lifecycle impacts to consumers.</li> </ul>	<ul style="list-style-type: none"> <li>Syrah Group has full chain auditability of its AAM product from origin to AAM.</li> <li>Lifecycle analysis completed by Syrah Group demonstrates materially lower GHG emissions profile versus existing Chinese supply.</li> <li>Most AAM producers rely on 3<sup>rd</sup> party / bifurcated supply chains interrupting audit chain.</li> </ul>
<b>Proven technology</b>	<ul style="list-style-type: none"> <li>Graphite is the dominant anode material in incumbent lithium-ion battery technology.</li> <li>Treat of novel anode materials and battery technologies (i.e. silicon) requires technological breakthrough, cost-down and massive capital investment in manufacturing base/new charging infrastructure for mass market penetration.</li> </ul>	<ul style="list-style-type: none"> <li>Syrah Technologies using proven processes and technology and proposing to supply a drop-in alternative AAM to material that is already successfully used extensively in the supply chain.</li> <li>Significant capital deployed or planned to be deployed in battery manufacturing facilities that require Syrah Technologies' product.</li> <li>Once battery raw material is selected, it is very challenging to replace this key input in a manufacturing line.</li> </ul>

Figure 23: Barriers to mass market penetration for AAM in the United States.

Syrah Group's initial entry into this market in the USA via its Phase 2 offtake agreement has demonstrated key market requirements can be met, and there is material demand for local capacity enabling security of supply and risk diversification.

### Product Development

Syrah Group is the largest ex-China producer of natural graphite as input to the LiB supply chain and has developed extensive understanding of the input material requirements for AAM production through sales of natural graphite from Balama. Syrah Group and Syrah Technologies further has a six year research and development track record and has refined its base AAM product roadmap informed by customer demand, understanding of market and performance



requirements and commercial viability assessment. Syrah Group is focused on natural graphite products, given its upstream natural graphite position at Balama, and the expected trend towards consumption of natural graphite in battery anode blends (lower cost / differentiated ESG base / certain electro-chemical performance benefits).

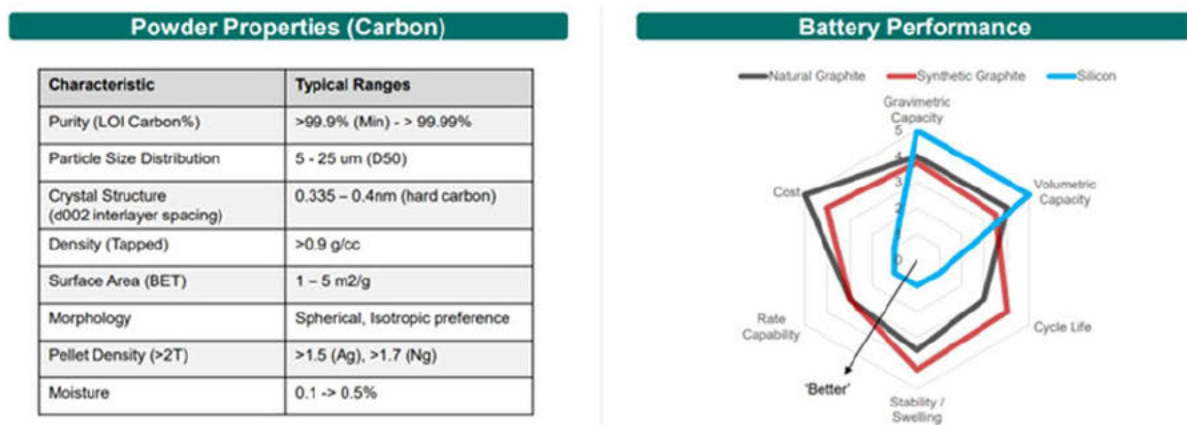


Figure 24: Typical natural graphite AAM properties and battery performance against synthetic graphite AAM.

Syrah's market entry natural graphite AAM products are CLP12 and CLP18 and Syrah Technologies' has executed a binding offtake agreement with Tesla Inc. for its base AAM product to be produced from Vidalia's Phase 2 facility. This offtake agreement incorporates an option over AAM of consistent specification from a future Phase 3 facility. Other tier 1 customers from the auto and cell manufacturing sector have expressed strong interest in purchasing Syrah Technologies' base products (as expressed in the Letters of Commitment attached this application) and are conducting testing and qualification on Phase 1 AAM.

(b) (4)

#### Commercialization Plan

Syrac Group's commercialization plan has involved engaging tier 1 automaker and battery cell manufacturing customers in the United States, determining the specification of AAM demanded in scale from such customers via extensive and iterative discussions and testing of AAM from the Vidalia Phase 1 qualification facility, (b) (4)

(b) (4) and converging on a detailed specification (b) (4)

(b) (4) Major supply chain participants (b) (4) are representative of the customers that Syrac Technologies is engaged with. Customer letters of commitment appended to this Full Application validates our broad commercial and technical interaction with industry and the broad support of Vidalia's development. The foundation offtake agreement that Syrac Technologies has executed for Vidalia AAM underlines the progress we have made in commercializing our process, technology and product. (b) (4)

(b) (4)

(b) (4)

(b) (4)

#### 4. Technical Qualifications and Resources

##### a. Vidalia Phase 3 Project Team Qualifications

##### Syrac Group Executive Team

**Name:** Shaun Verner | **Title:** Syrac Managing Director and Chief Executive Officer

Shaun joined the Company in October 2016 as Executive General Manager - Sales and Marketing. Prior to joining Syrac Group, Shaun was at BHP for 20 years in a variety of executive roles, with extensive international commercial and operational experience across a range of commodities including copper and base metals, uranium and thermal and metallurgical coal. Shaun has extensive general management and cross-functional commercial, operations, supply chain. He holds B.Bus/B.A (Monash University) and an MSc (Cranfield University).

**Name:** Julio Costa | **Title:** Syrac Chief Operating Officer

Julio has over 28 years mining, operations and technical experience gained from senior leadership roles for Alcoa Corporation, Rio Tinto Limited and Vale S.A, in Australia, Brazil,

Mozambique and North America. He brings significant mining operation design, commissioning and optimization experience, and a strong track record in community and stakeholder management and developing strong operating teams through people, process and technology. Julio holds a Bachelor of Chemistry from the Federal University of Minas Gerais, Brazil.

**Name:** Stephen Wells | **Title:** Syrah Chief Financial Officer

Stephen joined Syrah Group in August 2019. He is an experienced finance executive with over 25 years of broad financial expertise gained from a range of industries including institutional and investment banking, resources, and international financial services, working in London, Singapore, New York and Australia. Stephen was previously Chief Financial Officer and Chief Operating Officer of nlc Pty Ltd, and was also CFO for a range of businesses within National Australia Bank's Wholesale Banking division including the global specialized finance business covering infrastructure, clean energy, natural resources, asset financing and utilities. Stephen holds undergraduate and post-graduate degrees in economics, and an MBA from Melbourne Business School.

### **Syrah Group Operational and Functional Teams**

Under Julio Costa's leadership, Syrah Group employs a three-discipline structure:

1. Operations and Project
2. Technology Development and R&D
3. Technical Marketing and Product Management

Key members of each of these three teams are as follows:

#### **Vidalia Operations and Project Team**

The Vidalia team are accountable for the operations of the Phase 1 qualification facility, and implementation of the Phase 2 and, ultimately, Phase 3 expansion which includes the owners' team integration with Syrah Technologies' engineering services provider.

**Name:** Dr Anne Duncan | **Title:** Vice President USA Operations

Anne joined Syrah from Hatch, where she was Global Director -Bauxite & Alumina, responsible for the Global B&A Portfolio, including FEED Studies, Capital Programs, Projects, Closures & Troubleshooting. Before HATCH, Anne led the Specialty Refinery for the Frankfurt-based Almatiss, a world leader in specialty alumina. Anne was responsible for the operations in Louisiana of Almatiss Burnside in providing its global sites and third-party customers with premium alumina. She was also the Chief Advisor – Technology for Rio Tinto Bauxite and Alumina, leading the start-up of Yarwun Alumina Refinery in Gladstone and supporting other Rio Tinto sites to resolve technology and process challenges and implementation opportunities. Before that, Anne worked in a series of technical and processing roles in New Zealand, Australia, and Jamaica.

(b) (4)

[REDACTED]

(b) (4)

[REDACTED]

(b) (4)

[REDACTED]



(b) (4) [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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[REDACTED]

[REDACTED]

(b) (4) [REDACTED]

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[REDACTED]  
[REDACTED]

[REDACTED]

(b) (4) [REDACTED]

[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]

[REDACTED]

(b) (4)

(b) (4)

(b) (4)

#### **b. Vidalia Phase 3 Team Resourcing and Time Commitment**

Syrah Group executive and head office team members will commit time to Syrah Technologies' as required to support the Vidalia's Phase 3 project. The time commitment of Vidalia Operations and Project, Technology Development & R&D team and Technical Marketing & Product Management to support the Vidalia Phase 3 project is shown in the matrix below. Our team's time commitment will be divided across Vidalia's Phase 1 operations, Phase 2 expansion project/operations Phase 3 expansion project and other Syrah Group commitments.

(b) (4)

**c. Vidalia Existing Equipment/Facilities (Phase 1) and Key Learnings**

Syrah Group's existing R&D team undertook initial pilot plant work through China and Perth prior our USA development. The duration of experience and continuity of personnel was important as manufacturers cannot acquire talent and expertise as its currently dominated by China and Korea.

Syrah Technologies' utilizes its existing Phase 1 qualification facility and industry's leading vendors as main resources for testing process parameters and to develop solid correlations between process variables and product quality. The Phase 1 facility has a laboratory that is equipped to provide rapid feedback on product performance and metrics/indicators such as

(b) (4)

- [REDACTED]
- [REDACTED]
- [REDACTED]

(b) (4)

(b) (4)

(b) (4)

(b) (4)

[REDACTED]

[REDACTED]

**d. Technical Services Provided by DOE/NNSA FFRDC**

To the best of Syrah Technologies' knowledge, it is not receiving any technical services provided by US Department of Energy or National Nuclear Security Agency Federally Funded Research and Development Centers for its Vidalia Phase 1 operations, Phase 2 expansion project or Phase 3 expansion project.

**e. Exports of Critical materials to a Foreign Entity of Concern (as defined in 42 U.S.C. 18741 (a)(5)) and Commitment to Not Use Battery Material Supplied by or Originating from a Foreign Entity of Concern (as defined in 42 U.S.C. 18741 (a)(5)).**

Syrah Technologies' is not exporting or not does it plan to export critical minerals to a Foreign Entity of Concern (as defined in 42 U.S.C. 18741 (a)(5)). To the best of Syrah Technologies' knowledge, Syrah Group is not exporting or not does it plan to export critical minerals to a Foreign Entity of Concern (as defined in 42 U.S.C. 18741 (a)(5)). Syrah Group is undertaking a process to provide formal certification of this.

Syrah Technologies' commits to not using a battery material supplied by or originating from a foreign entity of concern (as defined in 42 U.S.C. 18741 (a)(5)). Syrah Technologies' will be sourcing natural graphite feedstock for Vidalia's Phase 3 operations from Syrah Group's United Arab Emirates incorporated marketing entity and ultimately from a Mozambique entity, Twigg Exploration & Mining Limitada, which owns and operates Balama and is 95% owned and controlled by Syrah, Syrah Technologies' parent company. Syrah Technologies notes that the US Embassy in Mozambique and the US International Development Finance Corporation are closely engaged with Syrah Group and Twigg representatives. Both groups are knowledgeable on Balama and understand its strategic position in the global graphite and battery anode supply chain.

## Statement of Project Objectives

### Phase 3 Expansion of Syrah's Existing Commercial-scale Natural Graphite Active Anode Material ("AAM") Facility in Vidalia, Louisiana ("Vidalia")

#### A. OBJECTIVES

The objective of the project is to construct and commission an integrated milling, purification and carbonization facility at Vidalia that will produce at least 45,000 metric tons AAM per annum to supply USA battery supply chain participant and auto OEM customers. Production from Vidalia will be to the specifications required by customers in physical, chemical, and elemental parameters including particle size distribution, surface area, density, purity, and moisture content.

#### B. SCOPE OF WORK

The project will be conducted in 3 budget periods:

**Budget Period 1: Definitive Feasibility Study, Emissions & Effluent Scope and Transition Detailed Engineering:** Complete a definitive feasibility study with on potential expansion of Vidalia to a production capacity of at least 45,000 metric tons AAM per annum. The study will determine a design basis for the expanded AAM facility at Vidalia, estimate capital and operating costs to a -5% to +20%. level of definition and assess financial economics. Ultimately, the completed study will inform a decision by Syrah Group to proceed with incurring further project costs on detailed engineering, and long-lead item procurement, of the expanded facility at Vidalia. Test-work and trade-off studies completed as a continuation of the Definitive Feasibility Study to optimize the design flowsheet to position the project to transition to detailed engineering.

**Budget Period 2: Detailed Engineering & Procurement:** Complete detailed engineering to at (b) (4) including procurement of long-lead item, critical path equipment. Ultimately, progress in detailed engineering, in conjunction with binding customer commitments (i.e. offtake agreements) and commitments to fully fund the project, will inform a final investment decision approval by Syrah Group's Board to proceed with incurring further project costs to construct the expanded facility at Vidalia.

**Budget Period 3: Construction, Commissioning and Start of Production:** Tender and select vendors for work packages. Finalize construction and equipment supply contracts and issue notices to proceed and equipment purchase orders in accordance with the project schedule. Delivery of on-site vendor work packages and other activities including equipment installation and construction activities. Operational readiness planning. Commission dry and wet areas of the facility and achieve serial production of on-specification material from the facility.

#### C. TASKS TO BE PERFORMED

The following tasks will be conducted:

##### All Budget Periods



## Overall Project Management and Planning

The Recipient will perform project management activities to include project planning and control, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall objectives of the project.

### **Task 0.0 – Project Management and Planning:**

The Recipient shall develop and maintain the Project Management Plan (PMP). The content, organization, and requirements for revision of the PMP are identified in the Federal Assistance Reporting Checklist and Instructions. The Recipient shall manage and implement the project in accordance with the PMP.

### **Task 0.1- Kick-Off Meeting:**

The Recipient will participate in a project kickoff meeting with the DOE within 30 days of project initiation.

## **Budget Period 1: Definitive Feasibility Study, Emissions & Effluent Scope and Transition Detailed Engineering**

### **Task 1.1 – Concept Study:**

Subtask 1.1.1 – Optimal Facility Output – The Recipient will develop an optimal production rate based on an understanding of the equipment.

Subtask 1.1.2 – Process Plant Definition – Strategy for scaling unit operations to deliver rates.

Subtask 1.1.3 – Economics of Facility – The Recipient will determine the high level Operating Expenses (OPEX) and Capital Expenses (CapEx) to develop a better understanding of the project economics.

### **Task 1.2 – Definitive Feasibility Study:**

Subtask 1.2.1 – Trade-off Studies - The Recipient will define and complete high impact trade-off studies to ensure long term viable and competitive operations are achieved. The trade-off studies will detail the concept for Basic Engineering. (b) (4)

■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]

**Subtask 1.2.2 – Basic Engineering** - The Recipient will conduct basic engineering, layout, HAZOP, design reviews, and cost estimates developed from line items, Construction Management, Procurement Services, Risk Register, SysCAD modelling of the Process Flow Diagram confirmed in Trade-off studies, Level 1 Schedule.

### **Task 1.3 – Emissions & Effluent Scope:**

**Subtask 1.3.1 – Emissions & Effluent** - The Recipient will define the emissions / effluent source description, composition, component & pollutants, and max flowrates. Assessment of the Stack Test results vs Vendor Results and options for permitting.

**Subtask 1.3.2 – Wastes** - The Recipient will define general wastes and process consumables, considering only large in-process consumable waste items.

### **Task 1.4 – Transition Detailed Engineering:**

**Subtask 1.4.1 – Develop Major Equipment** – The Recipient will develop the long lead time, high cost, or equipment affecting construction sequence and critical path; produce a key equipment list and detailed equipment data sheets / specifications; and secure firm quotations – price, fabrication time and likely delivery.

**Subtask 1.4.2 – Procurement** – The Recipient will develop procurement strategy for Vendor data and long lead time items, identify a priority equipment list and progress payment milestones for deliverables, consignments.

*[Each budget period must contain one significant SMART (Specific, Measurable, Achievable, Realistic, and Time Bound) Technical milestone per quarter and one Go/No Go Decision Point.]*

Milestone	Type	Description
Definitive Feasibility Study Commenced.	Technical / Financial	Design boundaries for Definitive Feasibility has been finalized. Definitive Feasibility Study team has been mobilized and work has commenced.
DFS Trade Off Completed.	Technical / Financial	Option definition, criteria selection and ranking, and assessment outcome completed for product mix, equipment selection, and logistics configuration.
Final Definitive Feasibility Study Completed	Technical / Financial	Completion of final Definitive Feasibility Study and initial Total Installed Cost (“TIC”) estimate has been completed, and Syrah Group executive team approval has been received.
Emissions & Effluent Scope Completed	Technical	100% of emissions sources and their environmental controls have been characterized in the emissions & effluent list.

Transition Engineering Complete	Technical	Strategy for long lead time equipment on critical path and Vendor Data for equipment affecting Detailed Engineering deliverables has been completed.
Approval of Transition to Detailed Engineering	Go/No Go	Assessment of the preliminary technology design and estimation of the project's financial economics to an acceptable level of confidence completed, verifying that the expansion project is technically and economically feasible. Go decision will approve spending on detailed engineering and long-lead item procurement to an approved budget.

**Continuation:** The Recipient is **NOT** authorized to initiate any scope in the next budget period without the DOE Contracting Officer's prior written approval in accordance with the award terms and conditions.

## **Budget Period 2: Detailed Engineering & Procurement and Environmental Permitting**

### **Task 2.1 – Detailed Engineering & Procurement:**

Subtask 2.1.1 – Award Detailed Engineering & Procurement Services Contract – The Recipient will award the Detailed Engineering and Procurement services contract for commencement and issue notice to proceed.

Subtask 2.1.2 – Execute Engineering Deliverables – The Recipient will develop the engineering work areas and complete the discipline engineering in Civil, Concrete, Electrical, Process, Mechanical, Piping, Instrument, Paint, and Insulation, complete the risk register & HAZOPS, finalise the Mass and Energy Balances and Basis of Design, finalize power loads, (b) (4) reviews and further refine the Total Installed Cost estimate.

Subtask 2.1.3 – Procurement – The Recipient will develop the logistics strategy / planning specifications, develop quotations and procurement recommendations, and deliver vendor information to discipline engineering.

Subtask 2.1.4 – Preparation of the Final Investment Decision Document – The Recipient will develop the project business case and investment description necessary for board approval of the final investment decision

### **Task 2.2 – Environmental Permit:**

Subtask 2.2.1 – Expedited Application – The Recipient will submit an Application for Approval of Emissions of Air Pollutants from the Louisiana Department of Environmental Quality Office of Environmental Services Air Permits Division.



*[Each budget period must contain one significant SMART Technical milestone per quarter and one Go/No Go Decision Point.]*

Milestone	Type	Description
Detailed Engineering Service Contract Award	Technical	Detailed engineering services package has been tendered, bids evaluated, terms and conditions agreed, and awarded.
TIC Complete	Technical	A detailed Total Installed Cost estimation for the project has been completed.
Environmental Permitting	Social	An application for Approval of Emissions of Air Pollutants from the Louisiana Department of Environmental Quality Office of Environmental Services Air Permits Division has been submitted and approved.
Long Lead Items	Finance	Approval for expenditure for long lead time equipment on critical path and vendor data for equipment affecting Detailed Engineering deliverables have been received.
TIC Complete	Technical	A detailed Total Installed Cost estimation for the project has been completed.
Customer Offtake Agreements Complete	Commercial	Customer commitments, in the form of binding offtake agreements, for most of the proposed production capacity of the facility have been executed providing revenue underpinning.
Committed Project Funding Complete	Commercial	Binding commitments to fully fund construction of the facility to start of commercial production, including a Grant Agreement, have been executed.
(b) (4) DE Complete	Technical	Detailed engineering has been progressed to (b) (4) to baseline final design / flowsheet and estimate capital / operating costs with a narrower level of confidence.
Environmental Permitting	Social	Environmental permits required to commence construction (Air Permit) and confirmation of effluent permit has been received.
Final Investment Decision Approval	Go/No Go	A 'Go' decision will approve spending on construction activities, subject to governance / delegated authority structure, and trigger notices to proceed being provided to vendors for initial and long-lead item equipment and construction services.

**Continuation:** The Recipient is **NOT** authorized to initiate any scope in the next budget period without the DOE Contracting Officer's prior written approval in accordance with the award terms and conditions.

### **Budget Period 3: Construction, Commissioning and Start of Production**

#### **Task 3.1 – Detailed Engineering:**

Subtask 3.1.1 – Execute Engineering Deliverables – The Recipient will continue to develop the engineering work areas, complete all remaining engineering and proceed with IFC for all construction work packages / contracts for the facility.

#### **Task 3.2 – Construction Management:**

Subtask 3.2.1 – Construction Management Services Contract – The Recipient will award the Construction Management contract for commencement and issue Notice to Proceed. Mobilise the Construction Management team to site.

Subtask 3.2.2 – Construction Safety Management Manual – The Recipient will approve the Safety Management Plan developed by the Construction Management team leadership

Subtask 3.2.3 – Procurement Strategy – The Recipient will develop and finalize the procurement contract terms and conditions all in accordance with a developed construction and procurement governance, safety leadership, quality, procedures, and financial management.

Subtask 3.2.4 – Site Mobilization and Early Works – The Recipient will strip and grub & install limestone for construction trailers, connect utilities to trailers, install fencing on new construction area, demarcate ongoing operations from construction zones, layout pile installation / commencement, award piling subcontractor and mobilize piling activities.

Subtask 3.2.5 - Construction Work Packages – The Recipient will convert the Engineering Deliverables to the appropriate work packages for a bidding process for construction. Consolidation of Work fronts for efficiency in construction and procurement.

#### **Task 3.3 – Procurement:**

Subtask 3.3.1 – Equipment Supply Procurement and Contracts – The Recipient will solicit competitive bidding for installed equipment, evaluate bids received and award contracts for equipment supply for fabrication and delivery of equipment to site in-line with the overall project schedule and as not to compromise the critical path schedule.

Subtask 3.3.2 – Construction Contracts – The Recipient will award will solicit competitive bidding for construction services and bulk materials supply, evaluate bids received and award contracts for construction services and bulk materials supply in line with the overall project schedule and as not to compromise the critical path schedule.



**Task 3.4 – Operations Readiness:**

**Subtask 3.4.1 – Operations Readiness** - The Recipient will recruit, train, and assess competent employees in preparation for operations.

- Receive the Vendor Data from the Engineering Procurement Team necessary for Operations and maintenance including operating and capital spares. The recipient will assimilate into the CMMS procedures for sparing and warehouse stock.
- Procedures for Operations – Plan the Recruitment ramp-up and training content necessary for competency for Phase 3 operation. Safework Instructions are developed for the new equipment types and items necessary for safe operation, start-up, maintenance, and turnaround.
- QA / QC for sampling plans to inform the Process Control Philosophies for Production and Quality Targets. Protocols for Process Information History
- Review and update the successful Phase 2 Operations Readiness Roadmap for replication or redesign for execution Phase 3.

**Task 3.5 – Commissioning:**

**Subtask 3.5.1 – Equipment Commissioning** - The Recipient will test equipment and systems in all areas of the facility for mechanical integrity, electrical signal (control loops and single point testing).

**Subtask 3.5.3 – Process Water Runs on Wet Plant** - The Recipient will test equipment and systems in wet areas of the facility (i.e. purification area) on water for hydraulic performance and control system performance.

**Subtask 3.5.3 – End-to-End Commissioning** - The Recipient will test equipment and systems by introducing process media (acids, graphite) and undertake decontamination runs and disposal of off-specification products as required.

**Task 3.6 – Start of Production and Ramp-up:**

**Subtask 3.6.1 – Start of Production** - The Recipient will commence operations to serially produce on-specification products.

**Subtask 3.6.2 – Ramp-up** - The Recipient will ramp-up production to commercial capacity utilization rates across all facility processing areas.

*[Each budget period must contain one significant SMART Technical milestone per quarter and one Go/No Go Decision.]*

Milestone	Type	Description
Detailed Engineering Complete and Final IFC	Technical	All vendor data has been provided and detailed engineering has been completed allowing Syrah Technologies to proceed



		with IFC for all components of the facility.
Mechanical Equipment Received	Technical	All mechanical equipment has been fabricated and delivered to site.
Dry Area Mechanical Completion	Technical	Construction of all “dry” areas of the facility, including milling, coating & carbonization areas, has been completed and is ready for commissioning.
Full Mechanical Completion	Technical	Construction of all areas of the facility has been completed, including “wet” purification areas, and facility is ready for end-to-end commissioning.
Start of Production	Technical	Commissioning has been completed and integrated facility is operating continuously for several weeks with serial production of on-specification AAM.

*[The SOPO should not include a Go/No Go Decision in the last budget period or “continuation” approval language after the last budget period]*

#### **D. DELIVERABLES**

In addition to the reports specified in the "Federal Assistance Reporting Checklist", the Recipient will provide the following to the DOE Project Officer (identified in Block 15 of the Assistance Agreement as the Program Manager):

- Summary of accomplishments and project work report will be prepared for inclusion in the Vehicle Technologies Office annual programmatic progress report. Report will be due by October 31 of each year.
- Annual compliance audit report from an independent auditor, as required per 2 CFR 910.501. Report will be provided within a reasonable time after December 31 of each year where the prime Recipient has expended \$750,000 or more of DOE awards during a calendar year.

#### **E. BRIEFINGS AND TECHNICAL PRESENTATIONS**

- A technical presentation at the Vehicle Technologies Annual Merit Review Meeting held in Washington, DC.
- Detailed project status update briefings at Washington, DC or via communication/conferencing media approximately twice per year. Briefings will explain the plans, progress, and results of the technical effort.
- Technical paper(s) and presentations as appropriate at technical society meetings, or at technical exchange meetings.

**Application for Federal Assistance SF-424**

**\* 1. Type of Submission:**

- ☐ Preapplication  
☒ Application  
☐ Changed/Corrected Application

**\* 2. Type of Application:**

- ☒ New  
☐ Continuation  
☐ Revision

**\* If Revision, select appropriate letter(s):**

**\* Other (Specify):**

**\* 3. Date Received:**

07/01/2022

**4. Applicant Identifier:**

2678-1523

**5a. Federal Entity Identifier:**

**5b. Federal Award Identifier:**

**State Use Only:**

**6. Date Received by State:**

**7. State Application Identifier:**

**8. APPLICANT INFORMATION:**

**\* a. Legal Name:** Syrah Technologies LLC

**\* b. Employer/Taxpayer Identification Number (EIN/TIN):**

36-4865244

**\* c. UEI:**

MTVGPRKRFPV4

**d. Address:**

**\* Street1:** 2001 D A Biglane Rd

**Street2:**

**\* City:** Vidalia

**County/Parish:**

Concordia

**\* State:** LA: Louisiana

**Province:**

**\* Country:** USA: UNITED STATES

**\* Zip / Postal Code:** 71373-2001

**e. Organizational Unit:**

**Department Name:**

Department of Energy

**Division Name:**

**f. Name and contact information of person to be contacted on matters involving this application:**

**Prefix:**

Dr.

**\* First Name:**

Anne

**Middle Name:**

**\* Last Name:**

Duncan

**Suffix:**

**Title:** Vice President US Processing Operations

**Organizational Affiliation:**

**\* Telephone Number:** +1 225 614 8939

**Fax Number:**

**\* Email:** a.duncan@syrahresoures.com.au

## Application for Federal Assistance SF-424

### \* 9. Type of Applicant 1: Select Applicant Type:

Q: For-Profit Organization (Other than Small Business)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

\* Other (specify):

### \* 10. Name of Federal Agency:

Department of Energy

### 11. Catalog of Federal Domestic Assistance Number:

81.086

CFDA Title:

Conservation Research and Development

### \* 12. Funding Opportunity Number:

DE-FOA-0002678

\* Title:

Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing

### 13. Competition Identification Number:

Title:

### 14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment

Delete Attachment

View Attachment

### \* 15. Descriptive Title of Applicant's Project:

Phase 3 expansion of Syrah's commercial-scale natural graphite active anode material facility in Vidalia, Louisiana

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

**Application for Federal Assistance SF-424****16. Congressional Districts Of:**

\* a. Applicant LA-005

\* b. Program/Project LA-005

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

**17. Proposed Project:**

\* a. Start Date: 01/01/2022

\* b. End Date: 01/31/2026

**18. Estimated Funding (\$):**

* a. Federal	219,820,610.00
* b. Applicant	224,996,240.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	444,816,850.00

**\* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

**\* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

☒ \*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix: Dr. \* First Name: Anne

Middle Name:

\* Last Name: Duncan

Suffix:

\* Title: Board of Managers Authorized Representative

\* Telephone Number: +1 225 614 8939 Fax Number:

\* Email: a.duncan@syreresources.com.au

\* Signature of Authorized Representative:

(b) (6)

\* Date Signed: 07/01/2022

## Instructions and Summary

Award Number: DE-FOA-0002678

Award Recipient: Syrah Technologies LLC

Date of Submission: July 1, 2022

Form submitted by: Syrah Technologies LLC

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your EERE contact!**  
**Do not modify this template or any cells or formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your EERE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

### BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

### SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

#### Section A - Budget Summary

(b) (4)

#### Section B - Budget Categories

CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Costs	% of Project	Comments (as needed)
a. Personnel	(b) (4)					\$3,505,631	0.79%	(b) (4)
b. Fringe Benefits						\$0	0.00%	
c. Travel						\$0	0.00%	
d. Equipment						\$245,694,660	55.24%	
e. Supplies						\$0	0.00%	
f. Contractual								
Sub-recipient						\$0	0.00%	
Vendor						\$195,086,559	43.86%	
FFRDC						\$0	0.00%	
Total Contractual						\$195,086,559	43.86%	
g. Construction						\$0	0.00%	
h. Other Direct Costs						\$530,000	0.12%	
Total Direct Costs						\$444,816,850	100.00%	
i. Indirect Charges						\$0	0.00%	
Total Costs						\$444,816,850	100.00%	

Additional Explanation (as needed):

**Name of the applicant:** Syrah Technologies LLC.

**Project director/principal investigator(s):** Anne Duncan, VP USA Processing and Operations and Board of Managers of Syrah Technologies LLC.

**Project title:** Phase 3 expansion of Syrah Technologies' existing commercial-scale natural graphite Active Anode Material ("AAM") facility in Vidalia, Louisiana ("Vidalia").

**Project objectives:** Engineering, procurement, construction, and commissioning of Vidalia's Phase 3 expansion from 11,250 metric tons per annum ("tpa") to at least 45,000tpa AAM per annum.

**Project description:** Vidalia is a USA-based integrated milling, purification, coating and thermal treatment operation that is producing on-specification AAM, using a natural graphite feedstock from Balama graphite operation in Mozambique ("Phase 1"). A final investment decision on the expansion of Vidalia's capacity to approximately 11,250tpa AAM ("Phase 2") was taken in February 2022, underpinned by an offtake arrangement with Tesla, Inc. and full equity funding. Construction of the Phase 2 facility is underway with start of production scheduled for the third quarter of 2023. A tertiary expansion of Vidalia's capacity to at least 45,000tpa AAM ("Phase 3") is advancing and the subject of this application.

**Methods to be employed at Vidalia:** Natural graphite concentrate with 95-96% carbon grade from Balama is milled to achieve targeted particle size distribution, shaped to round particle edges and polished/compacted to enhance density through mechanical mills to produce spherical graphite. Spherical graphite is then chemically purified to produce a purified spherical graphite with a >99.95% carbon grade. Purified spherical graphite is coated with carbon, typically pitch, and thermally treated using precise heating/cooling curves to produce natural graphite AAM. Vidalia's processing methods are already utilized in the global AAM supply chain albeit being optimized to reduce water usage, greenhouse gas emissions and waste.

**Potential impact of the project:** On completion of construction of Phase 2, Vidalia will be the only vertically integrated and large-scale natural graphite AAM producer outside China and the first large scale natural graphite AAM producer in the USA. In 2026, USA-based lithium-ion battery manufacturing capacity is forecast to be 396GWh, which is estimated to require 384,000tpa AAM. Whilst significant investment is underway and planned in expanding US battery manufacturing capacity, planning and investment in a domestic AAM supply chain is significantly lagging and a major security of supply risk. USA battery manufacturers and automotive OEMs risk continuing to be 90% reliant on Chinese, and 10% on Japanese and Korean AAM imports. Accordingly, natural graphite is designated a mineral critical to the economic and national security of the USA in Executive Order 13817. The Phase 3 expansion of Vidalia will provide more significant, localized AAM supply with a fully ESG auditable, single chain of custody back to the source, materially reducing the USA's dependency on, and cost vulnerabilities of, imported AAM supply, and is aligned with Executive Order 13953 and 14017. Vidalia's Phase 2 and Phase 3 expansions are supported by tier 1 customers with large-scale battery and elective vehicle manufacturing positions in the USA.

**Major participants:** Not applicable.



**Prime Applicant: Syrah Technologies LLC (Control #2678-1523)**

**Project Title: Phase 3 expansion of Syrah's commercial-scale natural graphite active anode material facility in Vidalia, Louisiana**

Principal Investigator:	Anne Duncan, VP USA Processing and Operations and Board of Managers of Syrah Technologies LLC
Key Partners:	-
Proposed Project Duration:	48 months

**Proposed Objectives:**

- Engineering, procurement, construction, and commissioning of Vidalia's Phase 3 expansion from 11,250 metric tons per annum ("tpa") to at least 45,000tpa active anode material ("AAM").

**Project Impact/Takeaway:**

- Vidalia will be the only vertically integrated and large-scale natural graphite AAM producer outside China and the first large scale natural graphite AAM producer in the USA.
- USA battery manufacturers and auto OEMs risk continuing to be 90% reliant on Chinese, and 10% on Japanese/Korean AAM imports.
- The project will secure a critical domestic supply of natural graphite AAM, with a fully ESG auditable, single chain of custody back to the source, and materially reduce the USA's dependency on imported AAM supply.
- The project is supported by tier 1 customers with large-scale downstream manufacturing positions in the USA.

**Key Deliverables/Accomplishments:**

- Complete definitive feasibility study on the project
- Complete transition engineering on the project.
- Secure environmental permits for the project.
- Take a final investment decision on the project underpinned by customer/funding commitments and detailed engineering.
- Construct, commission and start on-specification AAM production from the project.

	Federal Share	Recipient Share
Total Project Cost	\$444,816,850	
Total Shares (Prime+FFRDCs+Subcontractors)	\$219,820,610	\$224,996,240
Prime	\$219,820,610	\$224,996,240
FFRDCs Total	\$0	\$0
Subcontractors Total	\$0	\$0

**This space reserved for EERE use.**

### Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352  
(See reverse for public burden disclosure)

<b>1. Type of Federal Action:</b> <input checked="" type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	<b>2. Status of Federal Action:</b> <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	<b>3. Report Type:</b> <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
<b>4. Name and Address of Reporting Entity:</b> <input checked="" type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if Known:  Syrah Techonologies LLC 2001 D. A. Biglane Road Vidalia, LA: Louisiana 71373  <b>Congressional District, if known: 5</b>		<b>5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:</b>     <b>Congressional District, if known:</b>
<b>6. Federal Department/Agency:</b> Department of Energy	<b>7. Federal Program Name/Description:</b> Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing  DE-FOA-0002678  CFDA Number, if applicable: 81.086	
<b>8. Federal Action Number, if known:</b>	<b>9. Award Amount, if known:</b>  \$	
<b>10. a. Name and Address of Lobbying Registrant</b> <i>(if individual, last name, first name, MI):</i>	<b>b. Individuals Performing Services</b> <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
<b>11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</b>	<b>Signature:</b> (b) (6) <b>Print Name:</b> Stephen J.D. Wells <b>Title:</b> Board of Managers and Authorized Representative <b>Telephone No.:</b> +61 3 9670 7264 <b>Date:</b> June, 30 2022	
<b>Federal Use Only</b>	<b>Authorized for Local Reproduction</b> Standard Form - LLL (Rev. 7-97)	

## INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.  
  
(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

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According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

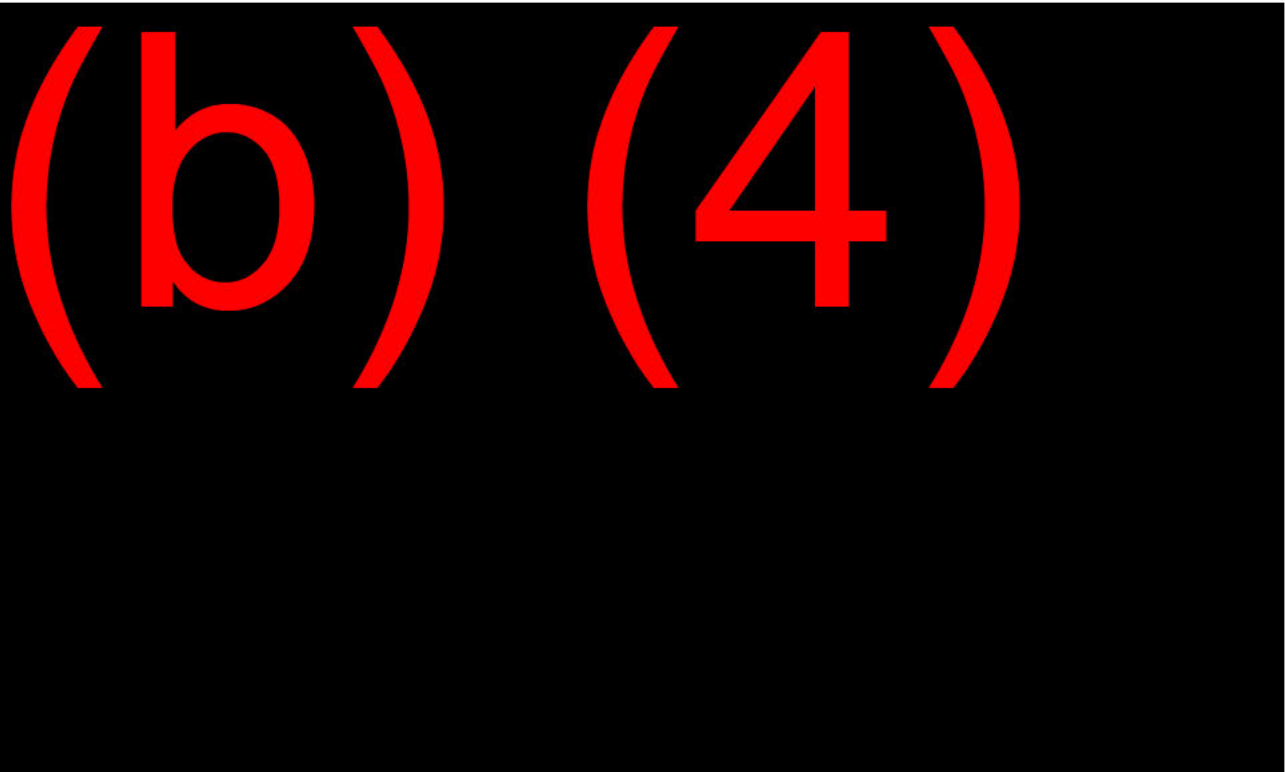


## 1. Waiver Request for Foreign Entity Participation as the Prime Recipient

Syrah Technologies LLC ("Syrah Technologies") appreciates that according to Section III.A. all prime recipients and subrecipients receiving funding under DE-FOA-0002678 must be incorporated (or otherwise formed) under the laws of a state or territory of the United States with majority domestic ownership or control and have a physical place of business in the United States.

Syrah Technologies, the Prime Applicant and Prime Recipient of this Full Application, is a Delaware incorporated entity and has a principal place of business is at 2001 D A Biglane Road, Vidalia, Louisiana 71373.

Syrah Technologies' is wholly owned by Syrah US Holdings Pty Ltd, an Australian incorporated private holding company. Syrah US Holdings Pty Ltd is a holding company and has no other interests besides its shareholding in Syrah Technologies'. Syrah US Holdings Pty Ltd is 100% owned by Syrah Resources Limited, an Australian-incorporated and Australian Securities Exchange-listed (ASX ticker: SYR) public company with a market capitalization of approximately \$550 million (A\$800 million). The corporate structure of Syrah Group is shown in Figure 1.



The shareholding structure of Syrah Resources Limited is well dispersed (>13,000 shareholders). AustralianSuper, Australia's largest superannuation (pension) fund, and a non-Government union/industry group owned entity, currently has a 18% holding in Syrah's issued ordinary shares. No other individual Syrah shareholder currently has a holding greater than 7% of Syrah Resources

Limited's total issued ordinary shares. However, as at end of May 2022, beneficial holders of approximately 61% of Syrah Resources Limited's issued ordinary shares, in aggregate, were domiciled in Australia. Accordingly, Syrah Technologies may not satisfy the requirement of majority domestic ownership in Section III.A.

	Shares	%IC
Australia	410,108,643	61.27
UK	20,172,067	3.01
Europe (ex UK)	33,139,705	4.95
North America	39,805,232	5.95
Asia	8,778,321	1.31
Rest of World	11,763,716	1.76
Unknown	1,828,699	0.27
Shareholdings below Threshold	143,735,139	21.47
<b>TOTAL</b>	<b>669,331,522</b>	<b>#####</b>

*Figure 2: Syrah Resources Limited ownership breakdown as at May 31, 2022. Sourced from Orient Capital Pty Ltd.*

Syrah Technologies requests a waiver of foreign entity participation, in respect of majority domestic ownership, for the following reasons:

- Ownership of Syrah Resources Limited is highly dispersed amongst private institutional and retail shareholders and no single beneficial shareholder has control of Syrah Resources Limited.
- Syrah Resources Limited has a Board that is comprised of five non-executive, independent Directors, in addition to the Managing Director. One of the Directors on the Board of Syrah Resources Limited is a US citizen and two Directors have a US residence.
- Syrah Resources Limited applies corporate policies and procedures that govern how its business is conducting and the company is committed to implementing and maintaining the highest standards consistent with the Australian Securities Exchange Corporate Governance Principles and Recommendations.
- Principally all activities of the Syrah Group in the United States are conducted by Syrah Technologies. Syrah Resources Limited provides Board/executive level oversight, centralized support functions and capital funding to Syrah Technologies.
- Syrah Resources Limited's ownership benefits Syrah Technologies and Vidalia's Phase 3 expansion project as it consolidates ownership of Balama graphite operation and the Vidalia AAM facility into one group. This vertical integration secures supply of natural graphite feedstock from an upstream source majority owned and controlled by Syrah Group and ensures Syrah Technologies is not reliant on third-party natural graphite feedstock. Furthermore, Syrah Technologies' understands that there is no significant resource nor mining/processing operation with majority US domestic ownership that could supply the required volumes of natural graphite feedstock to a domestic

commercial scale AAM facility. Syrah Technologies' represents the most viable option to secure supply of vertically integrated AAM for the domestic battery supply chain.

- Australia is a vital ally, partner, and friend of the United States. The United States and Australia share a long history of cooperation in security, trade and other areas. The US sources critical minerals from Australian domiciled companies and has recently expanded its definition of "domestic sources" under the Defence Production Act to include Australia.

- (b) (4)

In the establishment of the first significant vertically integrated operation of natural graphite AAM production outside of China, a significant amount of intellectual property is being developed within the Group, including by Syrah Technologies. This includes global supply chain knowledge, detailed customer engagement and technical interaction, and product and process development, with more development expected as the US market expands. Syrah Group has strict protocols in place and obligations embedded in its employment contracts, including in relation to confidentiality and ownership of intellectual property developed by employees, to prevent the leakage of intellectual property to third parties. Accordingly, we believe there is a low risk of such leak. However, if such leak occurred, Australia has a well-developed legal system that protects the intellectual property of businesses and individuals.

## 2. Waiver for Performance of Work in the United States (Foreign Work Waiver)

Syrah Technologies appreciates that according to Section IV.J.iii., all work under MESC/EERE funding agreements must be performed in the United States.

The majority of funding awarded to Syrah Technologies under DE-FOA-0002678 is planned to be used for engineering, procurement, and construction-related activities in connection with of the Phase 3 expansion of the Vidalia facility at this place of business as well as the purchase of equipment manufactured, and materials produced, in the US. However, Syrah Technologies expects that certain specialised equipment required in Vidalia's processes will be fabricated overseas by established, reputable international vendors, and shipped to Vidalia site for installation within the Vidalia Phase 3 facility. (b) (4)

Syrah Technologies note



that the equipment to be procured outside the USA is consistent across Phase 2 and Phase 3 expansions.

Syrah Technologies requests a waiver for foreign work, in respect of such specialised equipment for Vidalia's Phase 3 expansion being fabricated outside of the United States, for the following reasons:

- US-based vendors do not have the capability, experience nor proven track record in the battery anode supply chain to fabricate certain pieces of specialised equipment required for Vidalia's processes.
- Specialised equipment is vital to Vidalia in manufacturing AAM to the specification required by customers, and therefore Syrah Technologies establishing a commercial AAM operation for the domestic battery supply chain. (b) (4)  
[REDACTED]
- All specialised equipment manufactured outside of the US will be installed in the Vidalia Phase 3 facility and operated on site.
- International vendors used for specialised equipment will train Syrah Technologies' US-based employees in operating such equipment to the extent Syrah Technologies does not have the experience from operating the Phase 2 facility.
- (b) (4)  
[REDACTED]

Based on Syrah Technologies' scoping study evaluation of equipment to be used in Vidalia's Phase 3 expansion and equipment selected for Vidalia's Phase 2 expansion, the countries in which the foreign work may be performed in are (b) (4)  
[REDACTED]

Syrah Technologies notes that the use and installation of this equipment at its Vidalia facility in the United States will underpin the largest and most progressed vertically integrated natural graphite AAM supply option outside of China, and accrue significant benefits to Syrah Technologies and our partners within the United States as a result.

To the greatest extent practicable and subject to the existence of equipment supply vendors, Syrah commits that all equipment purchased with funds made available under this FOA will be American-made.

**SYRAH TECHNOLOGIES LLC  
EQUITY PLAN: QUALITY JOBS AND COMMUNITY BENEFITS  
FOR VIDALIA, CONCORDIA PARISH, AND THE MISS-LOU DELTA**

**EQUITY, JOBS, & COMMUNITY**

**BACKGROUND**

Syrah Resources Limited (“Syrah”) is an Australian Securities Exchange listed natural graphite and battery technologies company with an operating natural graphite mine and processing plant in Balama, Mozambique (“Balama”) and a downstream natural graphite active anode material (“AAM”) processing facility in Vidalia, Louisiana (“Vidalia”). Syrah Group’s US business, inclusive of Vidalia, is conducted by Syrah Technologies LLC (“Syrah Technologies”), a wholly owned subsidiary of Syrah. The Vidalia site includes 25 acres initially, a 50,000 sq. ft. industrial building, and a more recent purchase of additional acreage (13 acres). Development at the site to date has been focused on establishing production lines that creates an environmentally superior product to existing supply, and is quickly providing growth and leadership within the United States and in European markets. These activities have been marked by a capable workforce and superior relations at all levels of government and community engagement. Our efforts in Vidalia and the surrounding commuting area have been chronicled in various trade and development articles, have exceeded future years’ targeted diversity participation-density measure for hiring targets as published in Q3-2021 quarterly reports, and have already been found to contribute “beneficial socioeconomic impacts...from increased employment opportunities, tax revenue generation, and direct and indirect spending in the local economy” and “will benefit the regional economy”<sup>1</sup> which received a “Finding of No Significant Impact.”

Jobs to date have risen to a current level of 34 full time equivalent (“FTE”), with key roles in plant leadership and administration at Vidalia being performed by women; hiring practices resulting in 26 of the 34, or 76%, being in targeted Disadvantaged Communities (both as defined by the U.S. Department of Energy Justice 40 interpretations and amongst indicators found in Federally-generated data), practicably equivalent to this project’s Equity Plan Focus Area; and supported by the community, local government, Louisiana Economic Development and its FastStart jobs program and Central Louisiana Technical and Community College participation. We offer these experiences as demonstration of our foundational commitments to advancing Quality Jobs and Community Benefits in our continued, phased investments and as indicators of our propensity for meeting and exceeding expectations for meaningful outcomes under the Funding Opportunity.

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<sup>1</sup> XVII Program Environmental Assessment Syrah Technologies LLC Expansion of Active Anode Material Manufacturing Facility Vidalia, April 2022

## **GEOGRAPHIC REPRESENTATION AND DATA:**

Our Equity Plan, in addition to policies and practices, is supported by a foundation of data and geography, by which to project the propensity for meaningful outcomes with employment and community. A project focus area is established based on the proximate maximum commuting time of 1 hour 15 minutes and a core focus area utilizing the constraints of geographic components curated from American Community Survey, U.S. Bureau of Census, U.S. Department of Energy, and various other Federal resources compiled within Headwaters Economics data tools. “Figures, maps, and images” are offered as data visualizations, with source credits for included data and information on which comparisons are offered.

Assistance was provided by the Kisatchie-Delta Regional Planning & Development District, Inc. (“KD”), a Federally chartered economic development district under the planning partnership program of the U.S. Department of Commerce Economic Development Administration, also recognized as a Local Development District for the Delta Regional Authority and acknowledged in Louisiana Revised Statutes as one of the State’s Planning and Development Districts. Under separate cover, KD communicates its intent to assist Syrah Technologies. with enhancing the growth of our network for partner engagement to advance community economic benefits and to utilize its nearly 55 years of inherent, regional and multi-level relationships to connect our community-base at Vidalia and corporate leadership with capacity building for disadvantaged businesses and opportunities to leverage and maximize resources and opportunity for impacted populations and communities.

This focus area selection represents our targeted geographies for employment recruiting and community engagement, and identifies primary coverage areas for our Equity Plan. The Equity Plan also serves as an illustration in accompaniment to our federal investment request under the battery manufacturing and materials processing sector support. Such investment will support sustainable community economic development and prosperity (contributing to the country’s energy technology and climate goals, and accelerate job growth and job quality) while advancing principles and priorities including but not limited to community and worker engagement; job quality; diversity; equity; inclusion; accessibility (DEIA); and Justice40.

## **EQUITY PLAN: COMMUNITY, JOBS, DEIA, & JUSTICE 40**

### **A. COMMUNITY**

<b>Community-Based / Organizational Engagement</b>	
<i>Present and Cumulative Context</i> Local stakeholders include residents, workers, small businesses (such as the local contractors engaged in Phase 1 and site development) who have been engaged directly and indirectly at public meetings (council meetings), civic organization meetings (Chamber of Commerce), press conferences, and through open invitations and an accessible leadership team. Phase 1	<i>Planned</i> Continuation of frequency of multi-level communication at local events, with media, in public meetings, and with civic organizations to

development was pursued with community leader participation and endorsement at Vidalia and with Louisiana Economic Development and in conjunction with Natchez, Inc. (economic development organization).	continue in similar process as prior to and leading up to initial location and development for Vidalia siting.
All communities within the commuting/focus area have some level of economic or other disadvantage or higher concentration of disadvantaged persons, so widespread contact has been the approach and consistent activity. Media releases and news conferences with public exposure and extensive outreach and events have prepared and informed community members of construction, job fairs, progress, future development activities, and processes toward growth. Syrah Technologies has already had two site tours and Q&A for community stakeholders.	A local figure has been hired into the plant administration leadership for functioning as a liaison to help assure this approach is maintained and expanded upon.
<b>Community Agreements</b>	
Endorsement in the form of resolution for incentives programs participation was accepted and approved pursuant to Syrah Technologies request for endorsement following Dr. Loren Scott (an economist) having evaluated and reported to the community the direct and indirect benefits to be felt within the area and state as a result of the investment and then-projected growth (which is now being expanded upon).	Future activities would be handled similarly to provide for intent and measurable milestones of activity for hiring and investment, in effect a contract for development, prior to receipt of tax advantages/benefits to Syrah Technologies and benefits to the community being projected at higher community benefit than tax exemption levels (prior to indirect multiplier impacts on the economy).
Additionally, Syrah Technologies has agreed to support Natchez Inc. (Natchez, MS being a sister or twin community to Vidalia, LA across the Mississippi River) as a foundation client on its \$5 million grant application for Green Industries Training (to include mobile equipment, entry level operator, entry level rigging, basic computer and human-machine interface training, as examples) along with six (6) local industries.	

Syrah Technologies has frequent communication and open engagement within its community-connections. With the focus area being tremendously rural, the environment is close-knit though the community has limited formal organizational entities as 'voices'. Syrah Technologies has intermittent events and media interaction to ensure information is shared before, during, and after phased development to allow for and encourage both community input and community responsiveness.





<https://www.natchezdemocrat.com/2022/05/25/we-have-a-huge-opportunity-syrahs-ceo-talks-about-next-major-expansion-of-vidalia-louisiana-facility/>

<https://www.listcorp.com/asx/syr/syrah-resources/news/vidalia-fid-and-equity-raising-presentation-2666042.html>

Syrah Technologies maintains an up-to-date stakeholder engagement plan to ensure its senior representatives make routine and frequent efforts to speak with community, economic development and Government representatives to promote Syrah Technologies, inform development in Vidalia and Concordia Parish, solicit feedback on the company and its activities and seek support from community for Syrah Technologies' business. Stakeholders that it maintains engagement with are:

- Town of Vidalia
- Concordia Parish Economic Development / Natchez Inc
- Concordia Parish Police Jury
- Concordia Parish School Board
- Concordia Parish Sheriff
- Local Emergency Planning Committee (LEPC)
- Port of Vidalia
- Adams County Board of Supervisors
- Concordia Chamber of Commerce; Natchez Now
- Vidalia Fire Department
- Vidalia Police Department
- 5th Louisiana Levee District; Army Corps of Engineers
- Copiah Lincoln Community College (Natchez) and Central Louisiana Technical Community College (Ferriday)
- Natchez Democrat and Concordia Sentinel (Newspapers)
- Rotary Club and Other Local Civic Organizations
- Louisiana Economic Development (LED)
- Louisiana Department of Environmental Quality (DEQ)
- Louisiana Governor's Office
- Louisiana and Mississippi Representatives to US Congress and Senior/Junior Senators



Syrah Technologies is an active supporter in many diverse Community programs. In March 2022, Syrah Technologies contributed to public safety in Concordia Parish with their 100% funding of the 911eye Public Safety Telecommunicator for the Sheriff's Department. This system allows the callers to our local dispatchers to send a single use link to any 911 callers smartphone allowing them to securely share videos, photos and GPS location, text, and chat with the police. This visual intelligence supplements the audio information providing insight to the first responder helping them to deliver the appropriate response while ensuring safety to themselves and the public. The securely recorded media is potential evidence for further investigation.



In this photo, Syrah Technologies' managers were able to see this system in action at the dispatch – on the screen an officer in town making a demonstration 911 connected to the 911eye link and which permitted the dispatcher to see real time footage, GPS coordinates, and receive texts from the situation. The Sheriff's department indicated this system will be especially useful for domestic violence and human trafficking. This implementation the first 911eye implementation in Louisiana. Syrah has assisted Vidalia to be a demonstration site for this technology state-wide

Other 2022 community activities include donations toward Memorial Day Parade, Fireworks, as well as activity in the Literacy Program.

Community Engagement is part of the fabric woven through Syrah Technologies' relationships within the local regions. These regions having been largely determined as persistent poverty counties<sup>2</sup> have welcomed Syrah Technologies and form the basis of our workforce. Allowing recruiting of area employees by word-of-mouth, in addition to formal postings. This focus on community and engagement provides for a free flow of communication via direct access and visibility of leadership within the community, with residents and leaders, alike, and this relational 'investment' serves as an invaluable flow of information – multi-directionally; the future of the demonstration of focus areas ("DACs") and Vidalia share in progress and will share in its success. Risks are mitigated not just by trust and communication but by demonstrated responsibility and attention to detail. Dr. Scott's participation and attendance within the community, as a long-term mainstay associated with the flagship university of the State of Louisiana (LSU) and highly regarded, along with his tone to 'educate' provided for another layer of trust within the developing relationships forging in the focus area. His evaluation of the investment with delivery of public presentations on how he derived the community benefit measures for impact of job creation and investment, along with projections, provided the DACs with solid responses and expectations – that are already being met and reported on. Local hires are already known and expanding, so community members are not just seeing faces but seeing opportunity and outcomes directly.

<sup>2</sup> Congressional Research Service R45100 of April 14, 2022

## Community and Stakeholders

### United States Congresswoman Julia Letlow visits Vidalia

- The Company was pleased to host U.S. Congresswoman Julia Letlow from Louisiana's fifth district and members of her staff at its Vidalia Active Anode Material ("AAM") production facility during the month of August.
- Vidalia Mayor Buz Craft also joined Congresswoman Letlow for a tour of the plant and a presentation of Syrah's plans for expansion of the facility and the creation of a vertically integrated supply chain for U.S. lithium-ion battery and electric vehicle manufacturers.
- In a separate meeting held during the quarter, the Syrah team met with representatives of the Port of Vidalia and other key stakeholders to discuss the Company's logistics requirements and potential partnership opportunities.



Congresswoman Julia Letlow, Vidalia Mayor Buz Craft and other members of the local community

JOHN BEL EDWARDS

## OFFICE of the GOVERNOR

### Louisiana Gains Foothold in EV Battery Supply Chain with \$176 Million Syrah Technologies Expansion

February 15, 2022

Gov. John Bel Edwards and Syrah Resources CEO Shaun Verner announced that the company is investing \$176 million to expand its Syrah Technologies graphite processing facility in Vidalia, giving the state a supply-chain foothold in the rapidly expanding market for electric vehicle components produced in the United States.

Syrah Technologies is retaining 19 employees and creating 36 direct new jobs with average annual salaries of \$69,000, plus benefits. Louisiana Economic Development estimates the project will result in 52 indirect jobs, for a total of 88 new jobs in Louisiana's Central Region.

The company will add 180,000 square feet of building and processing space to its existing 50,000 square-foot facility, enough to install equipment and systems for processing natural graphite into active anode material (AAM) used in lithium-ion batteries for the electric vehicle industry. The expansion announcement comes on the heels of a December 2021 offtake agreement with Tesla Inc. to supply natural graphite AAM for use in batteries.

"Today's announcement by Syrah Technologies is another example of how Louisiana's commitment to a cleaner energy future can strengthen our economy," Gov. John Bel Edwards said. "This is just the beginning of Louisiana's efforts to help vehicle manufacturers leverage our state's unique logistical advantages to meet increasing electric car and truck demand. We congratulate Syrah for its commitment to sustainability, and applaud their continued investment in rural Louisiana."

Headquartered in Melbourne, Australia, Syrah Technologies is the subsidiary of Syrah Resources, which owns the Balama Graphite Operation in Mozambique. The Balama site is home to globally significant natural graphite resources, and it is the world's largest integrated natural graphite mine and processing operation. The Vidalia expansion, which will allow for the annual production of an estimated 11,250 tonnes of AAM, is central to Syrah's strategy to become a large-scale vertically integrated natural graphite AAM supply option for the growing U.S. battery supply chain and electric vehicle market.

"This is a confirmation of our vision to develop the first AAM facility in the U.S. and in Louisiana," Verner said. "Louisiana has all the right elements for the development of new technology in the manufacturing sector, including a vision for sustainable development that aligns well with Syrah's values. Vidalia is a great community that has access to technology centers and benefits from excellent supply chain logistics optionality for this and potentially future expansions."

The company expects construction on the AAM facility expansion to begin in the first quarter of 2022, with hiring for the new jobs to commence around mid-year. Construction is projected to be completed in mid-2023, with AAM production beginning in the third quarter of 2023.

"Since coming to Vidalia in 2018, Syrah Technologies has been a bright and integral part of economic development in Vidalia and our region," Vidalia Mayor Buz Craft said. "This company has been extremely active in our community. We are proud of our partnership with Syrah Technologies and we are looking forward to helping them achieve their goals and financial success."

The State of Louisiana offered Syrah a competitive incentive package that includes the services of LED FastStart, the No. 1 ranked state workforce development program in the nation for the past 12 years. Syrah Technologies is expected to utilize Louisiana's competitive incentives, including the Industrial Tax Exemption Program and the Quality Jobs program for Louisiana-based employees.

"Congratulations to Syrah Technologies and the people of Concordia Parish on this important economic development announcement," Louisiana Central President and CEO Jim Clinton said. "Syrah's investment will continue to diversify and expand the economy of Central Louisiana and provide critically needed high-paying jobs. The company is solidifying its position in the global supply chain for the making of lithium ion batteries. Concordia's strategic location on the Mississippi River is a highly valued asset for companies like Syrah."

## B. JOBS

### Attracting and Retaining Quality, and Skill with Workplace Standards

Syrah Group has the most developed intellectual property on the natural graphite AAM supply chain, including customers, products and processes, outside of China. Our exposure to the electric vehicle market (and decarbonization in general), customer engagement (e.g. Tesla and other tier 1 customers), association with the DOE, association with laboratories and universities including Louisiana State University, our strong corporate value proposition, and our reputation as an employer offering relatively well paid roles are expected to contribute to Syrah Technologies' ability to attract a skilled labor force to Vidalia. Syrah Group is committed to supporting and empowering its people to achieve their potential by providing a strong foundation for ensuring all employees have the opportunity to develop professionally and advance their careers. We remain committed to upskilling our local workforces and building internal succession capability to advance the Company's long term localisation strategy.

Vidalia includes a workforce stratum with Site Leadership, Commercial, Technology, Operations, and Project/Capital teams, to grow over future phases from initial hiring ramp up of approximately 36 FTE and projected to grow to 102 (b) (4) in subsequent phases. Projected wages for the next phase will start at (b) (4) above the focus area PCMI (2020 ACS 5-year PCMI) and will follow metrics for skills, certifications, and experience to support fair, livable, truly-quality jobs with equitable compensation. While leadership has been put in place, the operations are conducted with team management and rely on open flow of communication and fair remuneration metrics to assure reasonable growth and opportunity within our workforce. This is consistent with the Syrah Remuneration Policy and creates and forges trust and a practice of persisting flow of communication at all levels of performance.

In addition to training arrangements with Louisiana Economic Development and its world-class FastStart program, Syrah Technologies provides direct training and reserves resources for workers to apply for additional assistance to advance skill levels by using an application process that clearly communicates expectations and opportunity. Refer to the following links for examples of job fairs and career postings at Vidalia.

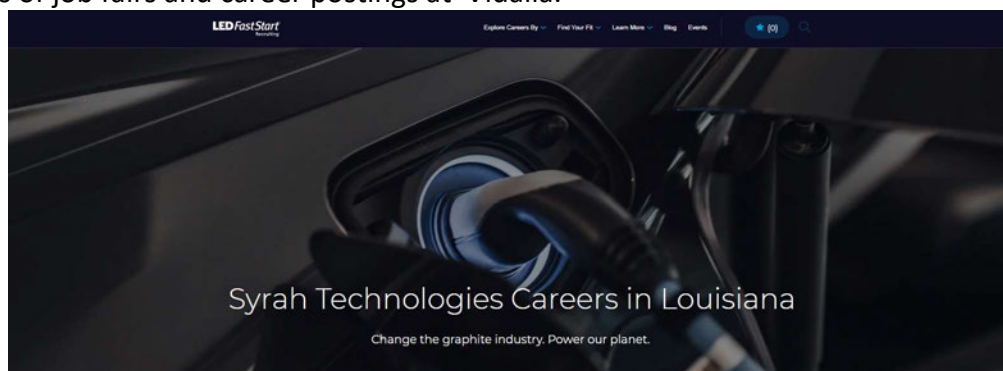


Figure 1: LEDFastStart Careers Page

(<https://opportunities.ledfaststart.com/global/en/syrahtechnologies-careers>)

The stability of our workforce is benefitted by the training we provide and contributes mightily to our safety and workplace culture. We currently provide this training for the team under Phase 1:

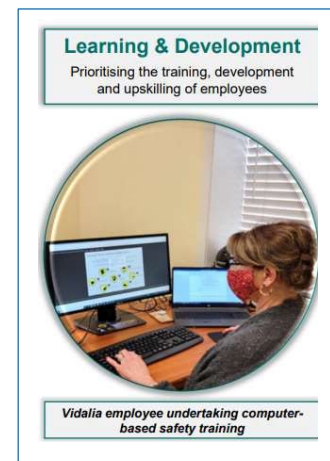
- Mobile equipment – our operations superintendent can train and assess operation of all mobile equipment on site
- OSHA - JJ Keller provides all online training for OSHA compliance
- ISO training – ENACT train select team members as auditors
- CINTAS - All our team are trained as first responders
- On the job training for SOP's
- Legal training (Jones Walker) for HR fundamentals for Managers
- LED Train the Trainer and other FastStart Projects for front line leaders

Future hiring will be concentrating more on frontline roles such as Operators and Maintainers, which will be accompanied by Officers and Techs roles for planning and administration functions. As employment is established, Syrah Technologies is operating Vidalia with initial contracts for all workers to clearly communicate levels of performance and operation and to instill assurances of conditions and expectations within our worker community and site operations. We have found this approach to benefit trust among the workplace and establish a sense of professionalism for our entire team.

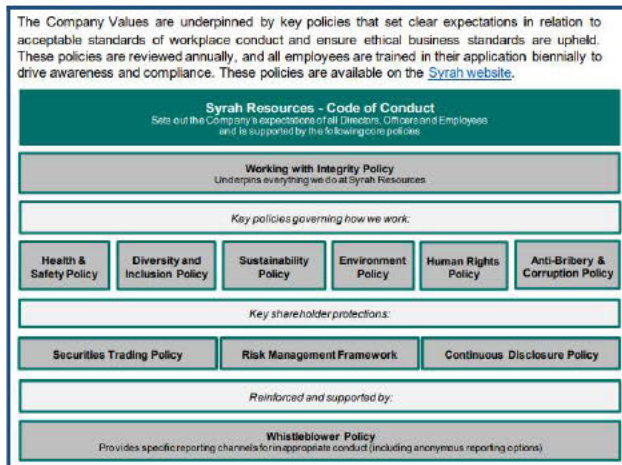
Our workforce retention strategy involves maintaining a culture of equity, fairness, and justice. With a functioning 2-way conversation, our intent is for team members to have a voice, to have forums and opportunities for asking questions and sharing information. Daily management with effective handovers support safety (hazards and interactions) and promote and build trust that we care about the welfare of our entire team.

A performance management system is used alongside bi-annual, individual career discussions, so the team has opportunity to address individualized areas of review, enrichment, and growth in general skills, in sector-based industry-specific functions, and in terms of credentialling. Our remuneration policy relies on metrics and supports quality jobs, attraction of a skilled and stable workforce, and continuity for our growth model – as well as our employees.

Our management has already participated in “Effective Management” and our leaders were trained on the Law by Sid Lewis (Jones Walker firm) and a number of applicable employment laws (including but not limited to applicable Employment Laws - harassment, at-will, race, age, gender, religion, country of origin, retaliation / whistleblower, protected concerted activity, defamation, etc). We promote a zero-tolerance culture for behaviors that can compromise employee relations – by employees and contractors.







Syrah Group's Code of Conduct is built and maintained around company values. We value being in the community and hiring locally and training regularly. In-house meetings for 'all hands' are conducted weekly with encouragement for agenda items to be generated from the floor, in addition to the Q&A.

Furthermore, Syrah Group's corporate policies and statements underpin our company's good corporate governance and the company's fair and transparent people management practices.

- **Human Rights Policy** respects and expressly supports the rights of all employees and contractors to freedom of association and collective bargaining.
- **Division & Inclusion Policy** is a commitment to achieving and maintaining a diverse and inclusive workforce.
- **Workplace Behaviour Policy** ensure all employees are afforded a safe and productive work environment free from bullying, harassment and other forms of inappropriate behaviour.
- **Working with Integrity Policy** is a commitment to maintaining international performance standards for corporate governance and compliance, through systems and processes which enable employees and contractors (our people) to work with integrity & fairness at all times.
- **Modern Slavery Voluntary Statement** acknowledges that, due to the geographical spread of the Group's operations, the inherent nature of business activities, our labour-force structures and prevailing socio-political and environmental conditions, modern slavery risks exist throughout the Company's supply chain. It also acknowledges Syrah Group's responsibility, as a responsible and ethical corporate citizen, to proactively identify and mitigate modern slavery risks across the business in collaboration with our employees, contract partners, suppliers, communities and stakeholders. We also recognise that protecting and respecting human rights is fundamental to ethical business performance and maintaining our social license to operate.

Our Code of Conduct and 18 company policies reflect Syrah Group's commitment to creating a safe, fair and open working place where highly skilled individuals can learn and grow.



## People

Syrah supports and empowers its people to reach their full potential



The health, safety and wellbeing of employees, contractors and key stakeholders remains Syrah's highest priority, which is why the Company has adopted a whole-of-business approach to maintaining a strong health and safety culture across the Group. The Group's well-established Health and Safety Management System includes Critical Hazard Management Standards which underpin the risk assessment process, associated controls and management actions. Syrah Group's Critical Hazard Management Standards and rigorous Risk Management Framework demonstrates that we understand our major risk exposures and have adequate controls in place to mitigate critical risks and prevent fatalities. Visible leadership is a crucial part of ensuring the effectiveness of the systems and controls we have in place and ensuring that employees (and contractors alike) understand the Company's expectations with regards to safety

Ahead of Phase 3 ramp up, Syrah Technologies plans to communicate more thoroughly to assure competency, safety, and achievement of benchmarks and milestones. Our model includes an integrated construction team, and we currently have relationships with over 60 local enterprises, service providers, and vendors.

## Health and Safety

Whole-of-business approach to maintaining a strong health and safety culture



Our jobs-development approach includes securing and growing a qualified, skilled, and up-skilled workforce with standards and written expectations to develop an inclusive team. As a responsible employer and local investor, we promote standards across our relationships to ensure safe handovers, responsible monitoring, open communication, legal and regulatory compliance, and a steady state of mitigating any risks, making responsible decisions, and maintaining a controlled approach for growth. This provides confidence for our team, our contractors, our vendors, cognizant agencies, permitting authorities, and community.

We actively communicate in advance. Our recent Phase 1 environmental study was supported in part by local expertise to assist with NEPA compliance, and that helps expand on our roots and relationships in the community. Additional parties are secured as needed to help communicate compliance and to address concerns thoroughly and accurately.

Syrah Technologies recently completed active engagement for permitting and compliance during the lending approval process, so the documentation in the Environmental Assessment further evidences the active engagement of the public, special populations, and cognizant and/or regulatory agency reviewers. This report<sup>3</sup> identifies “the low peak-construction and operational workforce required for the Project as well as the intent to use the capable and skilled local workforce, no substantial immigration of people to the local area...(with) adverse impacts on local housing, road networks, schools, hospitals, emergencies services, or utilities are not expected. Impacts on socioeconomic resources resulting from the Project would not be significant.” Later the report also concludes “[Permitted emission levels...are considered to be protective of human health and the environment... the Project will benefit the regional economy. There are no anticipated impacts that could give rise to disproportionate impacts on minority or low-income populations in the affected area...”

Time and again, authorities, officials, corporate representatives, and various intergovernmental partners are communicating the benefits, safety, standards, and responsibilities adhered to and protected by Syrah Technologies. The report continues on under the “Health and Safety” section to state, “Because of the measures to address health and safety...compliance with federal, state, and local regulations and standards, plans for preventing chemical spills and potential mishandling of hazardous materials; and the facility’s experience with handling...impacts on the health and safety of workers and the public...” The document is easily found via Internet search and explicit in its evaluation of the phased development to evidence strong labor and operational standards, safe, healthy, and inclusive workspaces and place within community – and more specifically for the continued growth and expansions of Syrah Technologies, certainly a precursor and demonstration of confidence in the timing, development, and operation of the facilities and production to meet community and competitiveness milestones.

Syrah, as owner and proponent for the project development continually communicates its values to existing and future workers, contractors, citizens and leaders, alike, and proudly uses these as

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<sup>3</sup> XVII Program Environmental Assessment Syrah Technologies LLC Expansion of Active Anode Material Manufacturing Facility Vidalia, April 2022

a foundation for enjoining a future company success with a flow of benefits to the community it is invested and vested in.

As reported in Africa Outlook Magazine<sup>4</sup>:

*"This groundbreaking project fits naturally within Syrah Resources' overriding Group goals of not just generating superior products but doing so upon a backdrop of enhanced customer collaboration, a refined supply chain management strategy, unparalleled industry innovation, and a strong adherence to adopting the very latest technologies.*

*The Company's values consequently incorporate areas of health & safety, transparency, accountability, environmental care, sustainability, and social enrichment across all of its projects."*

### **C. DEIA: Diversity, Equity, Inclusion and Accessibility**

Syrah is committed to achieving and maintaining a diverse and inclusive workforce that is representative of the communities and markets in which it operates and recognises that a diverse, equitable, inclusive and accessible workforce will directly contribute to the success of the organisation and create long term value for its stakeholders. Syrah Group has a Division & Inclusion Policy to support the Syrah Group's commitment to achieving and maintaining a diverse and inclusive workforce, at all levels of the organization, that is representative of the communities and markets in which it operates. This policy applies to all Syrah Group employees and entities, and extends to embedded consultants and representatives of Syrah Group.

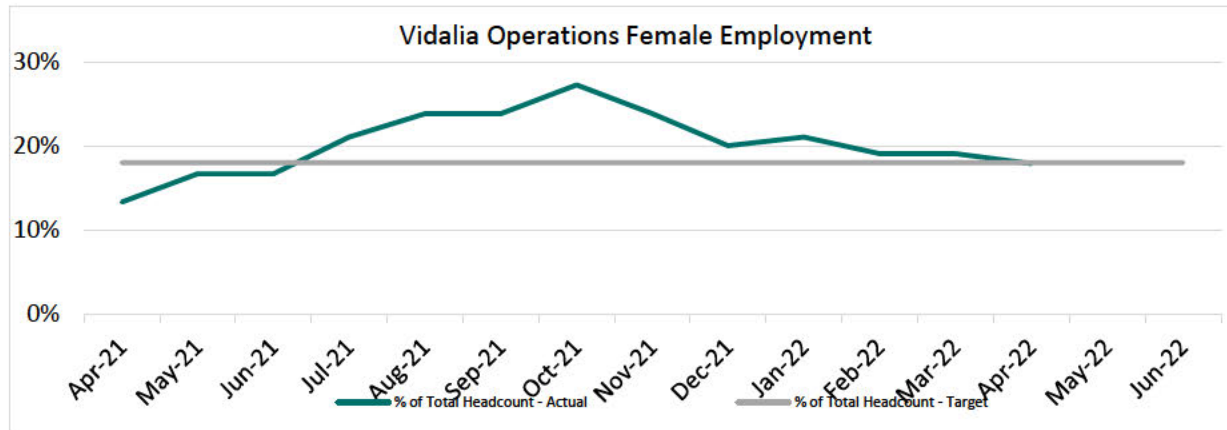
Syrah Group has implemented both quantitative and qualitative initiatives to drive the Company's diversity and inclusion efforts. Diversity performance (e.g. gender diversity and pay, pay equality, local employment, average training hours) is measured and reported to the Executive Committee and Board of Directors, as well as publicly in sustainability reports, on a regular basis. Syrah Group's diversity target<sup>5</sup> and actual as at 31 March 2022 is set out below:

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<sup>4</sup> <https://www.africaoutlookmag.com/company-profiles/698-syrah-resources>

<sup>5,8</sup> <https://www.syrahresources.com.au/corporate-governance>

Business Area	Description	TARGET			ACTUAL (quarter end)
		2021	2022	2025	
Board of Directors	Representation of women on the Board of Directors of the Company (includes Managing Director & Chief Executive Officer).	33%	33%	50% ± 10%	33%
Senior Leadership Team (CEO, CEO-1 & CEO-2)	Representation of women in senior leadership roles, defined as the Key Management Personnel ("KMP") of the Company and KMP direct reports in General Manager level roles and above.	25%	25%	50% ± 10%	27%
Corporate Group	Representation of women across Corporate business divisions (Australia and Dubai).	50% ± 10%	50% ± 10%	50% ± 10%	48%
Operations	Representation of women across Twigg Exploration and Mining Limitada (Balama Graphite Operation) and Syrah Technologies LLC (Vidalia Active Anode Material Project).	Balama: 20%	Balama: 20%	Balama: 22%	Balama: 18%
		Vidalia: 18%	Vidalia: 18%	Vidalia: 20%	Vidalia: 19%



Current gender diversity at Vidalia Operations is ~ 20%. With a female VP accountable for all US operations, the gender distribution is across leadership and hourly roles.

Syrah's gender diversity targets are reviewed on an annual basis as a minimum, and more regularly as deemed necessary to ensure targets are increased in line with organizational growth and development.

On all Syrah Technologies job advertisements, we ensure our DEIA agenda is prominent:

*"We are proud of our workforce diversity and remain committed to providing a safe and inclusive work environment for all of our employees. Accordingly, Syrah keeps an open mind to its recruitment and selection processes and strongly encourages people from all different backgrounds to apply for a role with the Company. Flexible working options are available to ensure we reach the widest pool of talent possible."*



As well as in Syrah Group's Diversity Reporting, which ensures that diversity performance is consistently measured and reviewed across the Group; establishment of a Diversity and Inclusion Committee; well broadcast policy against Discrimination, Victimization and Harassment; robust remuneration frameworks which forms an important driver of diversity and inclusion and other such policies as listed in our Diversity and Inclusion Policy<sup>6</sup>.

At Syrah Technologies, DEIA are characteristics of fairness that have been observed actively and proactively through policy and practice since prior Phase 1 development. Continued and future efforts will meet these standards and are considerate of the community context for demographic and socioeconomic levels as well as individual exchanges. The project focus area combines all or portions of approximately 18 parishes and counties as a commuting area and presented below for evaluative purposes of the community context.

COMMUNITY CONTEXT & DISADVANTAGED COMMUNITIES	Persist ent Povert y (per CRS R4510 0)	HUD FY 2022 (80%) Low Income Limit [LA \$40,550] [MS \$36,400]			COMBINED AREA DATA	Race & Ethnicity	
		Medi an Famil y Inco me	Low Inco me (Indivi dual)	MFI belo w LMI		Percent of Total, 2020*	
Avoyelles Parish, LA	ü	54,900	31,750			White alone	56.0% 70.4%
Caldwell Parish	ü	54,000	30,350			All other races	44.0% 29.6%
Catahoula Parish	✓	66,300	37,150			Black or African American	40.2% 12.6%
Concordia Parish	✓	51,300	30,350			American Indian	0.4% 0.8%
Franklin Parish	✓	47,500	30,350			Other races	3.4% 16.1%
Grant Parish (MSA)		63,800	35,750			Hispanic ethnicity	3.3% 18.2%
LaSalle Parish		57,300	31,850			Non-Hispanic ethnicity	96.7% 81.8%
Madison Parish	✓	40,300	30,350			Economic Distress	
Pointe Coupee Parish		88,900	49,700		COMBINED AREA DATA	Economic Distress Criteria	
Richland Parish	✓	49,600	30,350			24-month Avg. BLS Unemployment Rate ending May 2022	
Tensas Parish	✓	37,800	30,350			2020 Per Capita Personal Income (BEA PCPI)	
						2019 Per Capita Money Income (ACS 5-year PCMI)	
						24 Month Unemployment	Threshold Calculation
						BEA PCPI	Threshold Calculation
						ACS 5-Year PCMI	Threshold Calculation
						Selected Region	6.43 0.58 \$40,608 68.2 \$40,606 68.2
						U.S.	5.85 0.00 \$59,510 100.0 \$56,510 100.0
						Income [Disparity]	



West Feliciana Parish	✓	88,90	49,70		Per Capita Income (2020 \$s)	na	\$35,384
Adams County, MS	✓	43,90	32,95		Median Household Income* (2020 \$s)	na	\$94,994
Claiborne County	✓	32,30	32,95	✓	Total Households, 2020*	51,645	122,354,219
Franklin County	✓	56,40	32,95		Less than \$10,000	7,276	7,145,751
Jefferson County	✓	29,10	32,95	✓	\$10,000 to \$14,999	4,604	5,020,097
Warren County		62,60	35,10		\$15,000 to \$24,999	8,177	10,359,700
Wilkinson County	✓	40,30	32,95		\$25,000 to \$34,999	6,723	10,569,484
Combined area	77.78 %	Louisiana MFI \$72,400	Mississippi MFI \$65,000		\$35,000 to \$49,999	6,880	14,690,382
					\$50,000 to \$74,999	7,412	21,034,779
					\$75,000 to \$99,999	4,315	15,613,243
					\$100,000 to \$149,999	3,946	19,128,938
					\$150,000 to \$199,999	1,225	8,688,154
					\$200,000 or more	1,087	10,103,691
					Gini Coefficient*	na	0.48
					Percent of Total		
					Less than \$10,000	14.1%	5.8%
					\$10,000 to \$14,999	8.9%	4.1%
					\$15,000 to \$24,999	15.8%	8.5%
					\$25,000 to \$34,999	13.0%	8.6%
					\$35,000 to \$49,999	13.3%	12.0%
					\$50,000 to \$74,999	14.4%	17.2%
					\$75,000 to \$99,999	8.4%	12.8%
					\$100,000 to \$149,999	7.6%	15.6%
					\$150,000 to \$199,999	2.4%	7.1%
					\$200,000 or more	2.1%	8.3%



Syrah Technologies has begun investing in the “Almost Home” initiative and its service to justice-involved persons, building and early start in the social and civic strata of the region. Syrah Technologies has welcomed Almost Home residents and two individuals have had a second chance; to live in the group home while working for Rig Masters, a local contracting firm. These ex-felons were welcomed into the Early Works as traffic control and spotters, as well a team members for land clearing, fencing, grubbing, activities.

#### D. Justice40 Initiative

A new EO, EO 14008 Tackling the Climate Crisis at Home and Abroad, was signed and created the government wide Justice40 Initiative. Syrah Technologies compliance with EO 14008 is discussed below.

The Justice40 Initiative created a goal whereby 40 percent of overall benefits from federal investments flow to disadvantaged communities. A screening tool was developed by the CEQ for use in determining compliance with Justice40. The Climate and Economic Justice Screening Tool (CEJST) was tested in the public arena through April 22, 2022, after which the tool is to be refined

and streamlined. While this tool is still in development and not all potential features are available, a screening of the project in CEJST indicated that Census Tract 22029000300 in Concordia Parish is identified as disadvantaged regarding clean energy and energy efficiency, health burdens, and workforce development. Per the CEJST, the ranking is a result of:

- Poverty levels above the average 90<sup>th</sup> percentile (93<sup>th</sup> percentile),
- The number of persons at or older than 25 whose education level is less than a high school diploma (21%, the average is 10%), and
- Diabetes, heart disease, and low life expectancy all over the 90<sup>th</sup> percentile.

Data relative to education and poverty are associated with the 2015-2019 American Community Survey and health data is from the Centers for Disease Control and Prevention either from PLACES data compiled by between 2016 and 2019 or US Small Area Life Expectancy Estimates Project. Health data for diabetes and heart disease is a weighted percent of people that reported being told they had diabetes or heart disease by a health professional.

As the general project area in Concordia Parish has been identified as disadvantaged in three categories, use of federal funds in this area would be consistent with the Justice40 Initiative.

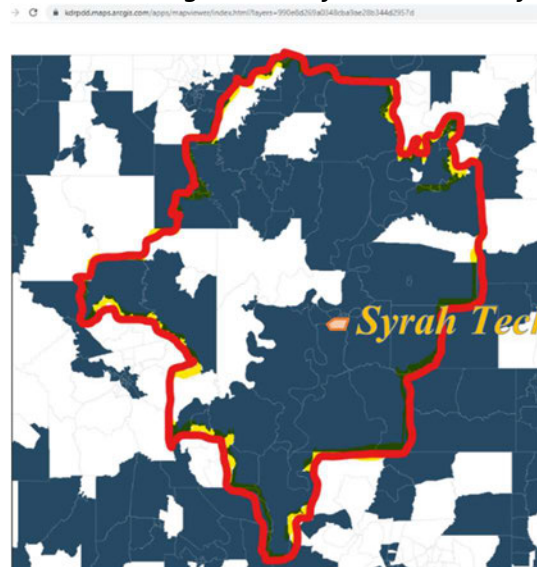
## Equity Plan Focus Area and Justice40

### VISUALIZATIONS AND DATA

#### Quality Jobs and Community Benefits Focus Area

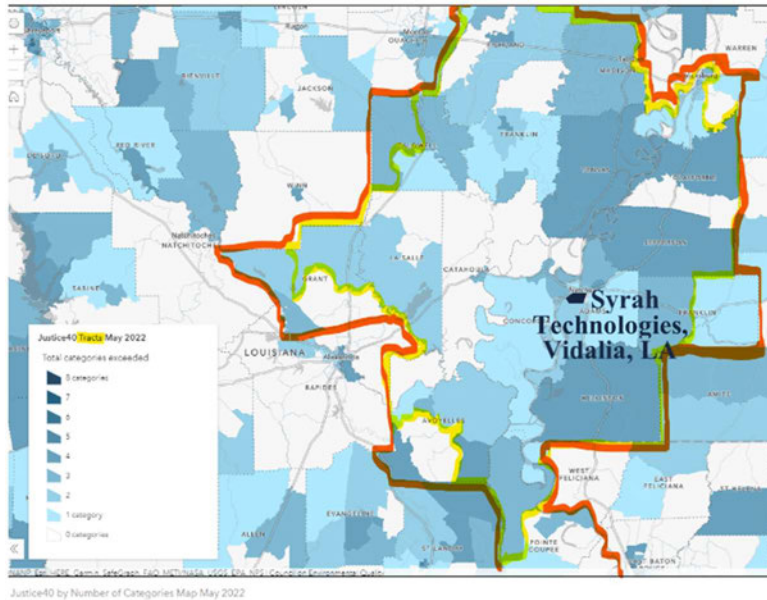
##### *Focus Area*

*“Focus area” generated from Justice40 feature layer in ESRI’s Living Atlas*



3

*Credit for layer data: Council on Environmental Quality, June 1, 2022, updated June 20, 2022*



*Credit for layer data: Council on Environmental Quality, May, 2022.*

*Images prepared by Kisatchie-Delta Regional Planning & Development District, Inc.*

*Utilizing Justice40 feature layer in ESRI's Living Atlas*

*Note: Census Tract data utilized for Headwaters Economics reports on demographics and populations at risk and County data utilized for socioeconomic trends and key indicators.*

*Reports generated from the Economic Profile System tool of Headwaters Economics are supported by the Bureau of Land Management, USDA Forest Service, U.S. Fish & Wildlife Service, the Kresge Foundation, Mapbox, and M.J. Murdock Charitable Trust vis [headwaterseconomics.org/eps](http://headwaterseconomics.org/eps).*

*Data sources include the U.S. Department of Commerce Census Bureau and its American Community Survey Office; U.S. Department of Commerce Bureau of Economic Analysis, Regional Economic Accounts; U.S. Department of Labor, Bureau of Labor Statics, Local Area Unemployment Statistics, Quarterly Census of Employment and Wages; U.S. Department of Interior; U.S. Department of Agriculture; and U.S. Department of Interior. U.S. Geological Survey.*

Syrah's approach is simple; we create a shared health & safety mindset by engaging with and training our people. We focus on the basics of planning, risk identification, risk mitigation and shared learnings. This method helps to instill the understanding that working safely is achievable and, collectively, we are all responsible for our own and each other's health & safety.

Partnering with stakeholders is a core business at Syrah and is the central premise of our Community Development Plan (CDP) in Mozambique that will guide the delivery of all community initiatives over the next five years. At Balama, Syrah has paid \$73 million in salaries in Mozambique to March 2022, has 96% Mozambican (local and nationals) direct employment, invested over \$2.8 million in community development and has entered into a Local Development



Agreement (LDA) with the Mozambique Government to define its contribution to sustainable development in the local community in key areas across:

- Education, training and local employment;
- Health promotion and awareness raising;
- Youth and leadership development;
- Agricultural / livelihood development;
- Food / nutrition and water security;
- Maintenance of cultural heritage; and
- Development of vulnerable people

Through the LDA, and a Local Development Committee comprising host community representations and overseeing investment, Syrah has contributed several community development projects including the development of two new schools, a wholesale central market, a new community center and an upgrade to a health center in the community. Syrah has also launched a Livelihood Development Program to provide specialist training and other support to community to encourage sustainable income generation activities. The program aims to provide the community with the necessary tools and knowledge to develop sustainable projects in agriculture, livestock, beekeeping, poultry and horticulture, as well improving crop yields and food security, with the goal of generating independent livelihoods separate from Balama operations. Our ability to work with and upskill local communities is a critical element of our license to operate and will directly determine the enduring benefit we create. Syrah's community engagement will evolve as with our business in the US. Syrah Technologies have community initiatives underway through ongoing stakeholder engagement with community groups, local academic institutions, local Government agencies, and local businesses including suppliers and service providers.

## Community and Stakeholders

### Ongoing commitment to partnering with the community and stakeholders for sustainability

Local Development	Economic Contribution	Health Program	Social Responsibility
Delivering on local development commitments across our Host Communities	\$72.8M <sup>(1)</sup> USD paid in salaries in Mozambique to date	Improving the health and wellbeing of employees and the community	Adopting a whole-of-social approach to working with communities & stakeholders
			
Construction of a central market in Balama	96% Mozambican (local and national) direct employment at Balama	Onsite malaria screening program	Donations made to Balama Health Centre

Beyond Syrah's statements are a framework demonstrating the intended framework for future activities and supports that engage disadvantaged populations and communities and demonstrate outcomes to be achieved for Syrah Technologies' Equity Plan for Quality Jobs and Community Benefits.

Proposed efforts support persons, workers, communities, and even disadvantaged/minority businesses and enterprises – and will certainly create a path of opportunity and even prosperity within the Delta, a long known and struggling corridor and pocket of poverty in the U.S. – poised with this project to create new innovations and competitiveness not just for the commuting area and region but for the industry and the nation.

## **SYRAH TECHNOLOGIES, LLC MILESTONE SUMMARY FOR FRAMEWORK OF FUTURE ACTIVITIES**

### **RELEVANT TO PROPOSED INVESTMENT AND COMMUNITY OUTCOME ACHIEVEMENT**

PERIOD 1: Strategy and Tool Development; Outreach, Demonstrations, and Invitations for Plant and Operational Visits to expand and strengthen STEM ecosystem with workers, small businesses, and educational partners, alike.

- Focus on outreach and engagement strategies to secure...
  - Focus on expanding the applicability of technical tools and training of contractors and service providers
  - Document outreach and engagement strategies
  - Record practices and evaluate opportunities for measurements and extension to additional communities, enterprises, and partners
    - # Partner contacts
    - # Engagement strategies

PERIOD 2: Focus on expanding capabilities of contractors and direct contacts to minimize region's market leakage and close gaps by identifying and nurturing capabilities

- Events for Capacity Building, Purchasing Exchanges, and Vendor Opportunities, focused on disadvantaged enterprises
- Virtual DBE Office, Services, and Technical Assistance for B2B
- Contractor events
- Record practices and evaluate, utilize reports, graphs, and mapping for demonstration of focus area (DACs) benefits
  - # Small business events
  - # Small business registrants
  - Qualitative and characteristic tracking to evaluated and to inform forgoing initiatives

PERIOD 3: Focus on validating results and refining supports for contractors/vendors and educational/training connections

- Enrichment for small businesses
  - Resources and technical tools
  - # SAM.gov



- # disadvantaged enterprise connections with intergovernmental resources and volume/growth opportunities by expanding emerging and leveraged networks of organizational resources
    - Purchasing and Contracting event opportunity postings
- Seasonal approach for sustaining benefits to communities and for communicating measures of achievement and/or improvement
- Flexible, and adaptive programming to expand reach and supports for DACs
  - # Partner Summit
- Seek out partnering relationships with Southern University (an HBCU in Baton Rouge serving central and northeast Louisiana) and its University Center at the College of Business, its AgCenter, and its entrepreneurial spirit for jointly attending to and addressing community, worker, and local area enterprise contacts
  - Project Management and Reporting
- Participate with regions' WorkReady initiatives, training and apprenticeship programs, potential internship/practicum activities and/or testimonials, including support ecosystem-network for P3-approach to tracking, monitoring, evaluating, and navigating and/or preparing next steps for flexible and adaptive approaches for assuring community benefits

## ENVIRONMENTAL INFORMATION VOLUME

**Company:** Syrah Technologies LLC

**Project title:** Phase 3 expansion of Syrah Technologies' commercial-scale natural graphite active anode material facility in Vidalia, Louisiana

**FOA AOI 2:** Commercial scale Domestic Production of Battery-Grade Graphite from Synthetic and Natural Feedstocks

**Technical point of contact:** Anne Duncan, Syrah Group's Vice President USA Processing Operations and Syrah Technologies' Board of Managers

**Business point of contact:** Viren Hira, Syrah Group's General Manager of Business Development and Investor Relations

**Team member organization:** none

**Senior/key personnel:** (b) (4)

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### Other Notice:

This Environmental Information Volume has been produced by Syrah Technologies and Providence Engineering.

## Acronyms and Abbreviations

≥	Equal to or greater than
%	Percent
AAM	Active anode material
APE	Area of Potential Effects
AQCR	Air Quality Control Region
BMP	Best management practice(s)
CAAA	Clean Air Act Amendments of 1990
CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
CH <sub>4</sub>	methane
CFR	Code of Federal Regulations
CLP	(b) (4)
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CRS	Cultural Resources Survey
DOE	United States Department of Energy
EA	Environmental Assessment
ECOS	Environmental Conservation Online System
e.g.	exempli gratia ( <i>Latin meaning "for example"</i> )
EO	Executive Order
EPA	United States Environmental Protection Agency
etc.	et cetera ( <i>Latin meaning "and the rest"</i> )
EV	Electric vehicle
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GHG	Greenhouse gas
HCl	hydrogen chloride
HF	hydrogen fluoride
HFC	hydrofluorocarbons
i.e.	id est, ( <i>Latin for "that is"</i> )
IPaC	Information for Planning and Consultation
ktpa	kilotonne per annum
LA	Louisiana

LDEQ	Louisiana Department of Environmental Quality
LPDES	Louisiana Pollutant Discharge Elimination System
MSGP	Multi-Sector General Permit
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NO <sub>x</sub>	Nitrogen oxides
NOI	Notice of Intent
NRHP	National Register of Historic Places
O <sub>3</sub>	ozone
Pb	lead
PFC	perfluorocarbons
PM <sub>2.5</sub>	Particulate matter with a diameter of 2.5 microns or less
PM <sub>10</sub>	Particulate matter with a diameter of 10 microns or less
PSG	Purified Spherical Graphite
SF <sub>6</sub>	sulfur hexafluoride
SHPO	State Historic Preservation Office(r)
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
SPCC	Spill Prevention Control and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
Syrah Technologies	Syrah Technologies LLC
US	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USG	Unpurified Spherical Graphite
VAM	Vidalia Anode Manufacturing facility
VOC(s)	Volatile Organic Compound(s)

## A. ENVIRONMENTAL INFORMATION

### 1. Project Summary

Syrah Technologies LLC (Syrah Technologies) is a manufacturer of active anode material (AAM), which is used in battery anodes for lithium-ion batteries for automotive applications, specifically electric vehicles (EV). Its objective is to expand its AAM facility in Vidalia, Louisiana (Vidalia) to meet the growing demand for batteries in automotive applications.

Syrah Technologies secured a Finding of No Significant Impact (FONSI) from the United States Department of Energy (DOE) on the Environmental Assessment (EA) prepared for the Phase 2 expansion of their existing Vidalia Phase 1 qualification facility. Phase 2, with start production in 2023, will expand Vidalia's production capacity to 11,250 metric tons per year/annum (tpa) AAM. The expanded Vidalia facility utilizes the same process technologies that Syrah Technologies has successfully demonstrated in its operating qualification facility, but at a larger scale. The Vidalia Phase 2 facility start of production is scheduled in 2023.

The Phase 3 expansion project, which is the project for which Syrah Technologies' full application for FOA Number: DE-FOA-0002678 (Full Application) relates to, is the expansion of Vidalia from 11,250tpa to at least 45,000tpa of AAM. New equipment would mostly be installed on Syrah Technologies' overall 38-acre tract of land that was previously disturbed/graded during construction of the existing facility or from previous agricultural activities. There are two future alternatives associated with Phase 3 that may require the use of additional properties. One alternative is the addition of an effluent pipeline to the Mississippi River. Currently, all wastewaters from Vidalia are discharged to the Town of Vidalia. Should the Town of Vidalia decide to limit future amounts of effluent from the Vidalia facility to be discharged through their existing wastewater treatment plant, Syrah Technologies would need to permit and install a separate effluent pipeline. The second alternative involves the purchase of land immediately north of the 13-acre Vidalia site. Additional land may be required to allow for the storage of mandated volumes of graphite flake. Land located to the north of the VAM is part of the Town of Vidalia Industrial Park and is presently available for expansion. This property is also former agricultural land.

(b) (4)

Environmental and social impacts are expected. Since Phase 3 will occur on a 13-acre site that is similar in composition to the existing 25-acre Vidalia facility with the Phase 2 expansion, adverse land impacts are not expected. If a new effluent pipeline is installed and/or land is acquired for materials storage, adverse impact could be avoided. Expansion will result in an increase in air emissions, raw materials consumption, and effluent production.

As the existing Vidalia facility and its expansions are designed to produce AAM for automotive applications, by bringing AAM to market for use in battery anodes for lithium-ion batteries,



greater use of EVs is anticipated, reducing overall national emissions of air pollutants and human-caused GHGs. Syrah Technologies would ultimately reduce air emissions such as ozone precursors, particulate matter, and GHGs that contribute to global warming.

Vidalia's Phase 3 expansion will result in additional employment, both temporary (construction) and permanent and would be expected to provide scaled up benefits related to the overall economic impact. With the ability to continue to leverage municipal services, adverse impact to available water resources, power infrastructure, and transportation infrastructure are not anticipated. No adverse impacts are expected to cultural resources, wetlands, or protected species.

Decommissioning of the facility has not been fully explored at this time. At such time as the Vidalia facility is decommissioned and dismantled, it is assumed environmental risk would be minimal. Any undergrounds would be closed in accordance with standard environmental practice and materials disposed of at permitted facilities.

## **2. Proposed Project and Alternatives**

### ***a. Proposed Project***

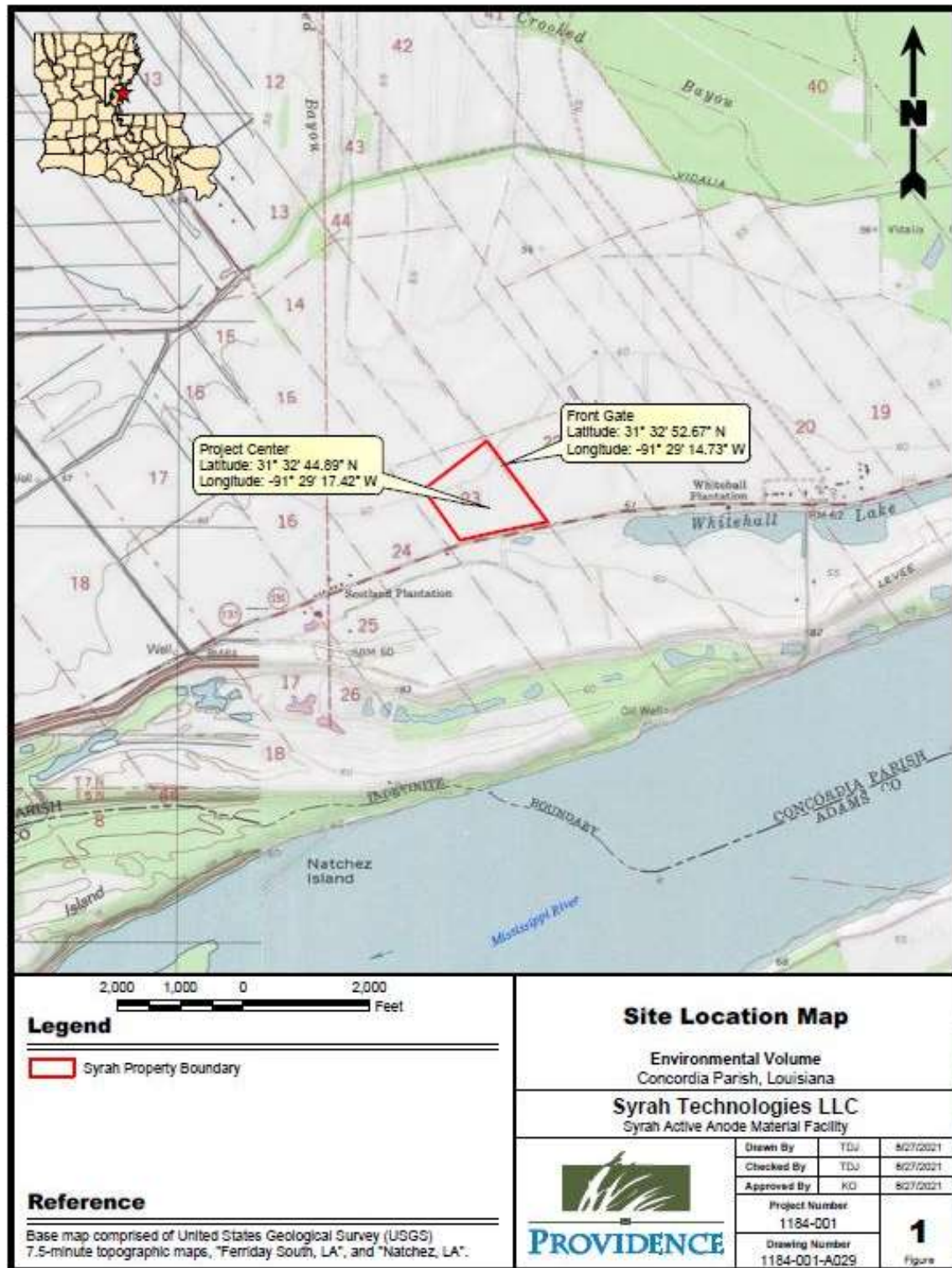
Syrah's Vidalia facility is in rural Concordia Parish within the Town of Vidalia Industrial Park, which spans an area of approximately 188 acres (including Syrah Technologies' site) between Louisiana Highway 131 (LA 131) and the Vidalia Canal (Figure 1). The VAM site is surrounded by agricultural land to the north, east, and west. LA 131 borders the southern property boundary, on the south side of which is agricultural land that abuts the main line Mississippi River levee. The 25-acre existing Vidalia site formerly supported a tire recycling business and active agriculture. The 13-acre Phase 3 site formerly supported active agriculture. No wetlands or other sensitive habitats, waterways, or forested areas are present on the site.

The proposed project involves the construction and operation of at least a 33,750tpa AAM expansion (Phase 3) to Syrah Technologies' upcoming 11,250tpa AAM expansion (Phase 2) at Vidalia. The current Vidalia qualification facility (Phase 1) that is being expanded to support Phase 2 is located on 25 acres and Phase 3 will require use of 13 acres immediately north of the existing Vidalia facility. Exhibit 1 presents two proposed facility layouts. New facilities include additional carbonization, purification, and spheroidization units.

Future project needs may involve the purchase of additional land in the Town of Vidalia Industrial Park to support natural flake graphite storage and/or the installation of an effluent discharge line to the Mississippi River. Figure 2 shows the limits of the industrial park and existing infrastructure. Any future effluent line would be constructed in cooperation with the Town of Vidalia's Port expansion. The Town of Vidalia is in the process of expanding port operations to include dock facilities. Constructing the effluent line in tandem and potentially within the boundaries of the port property would result in minimal to no additional environmental impact, as the Town of

Vidalia has already permitted the port expansion and its associated environmental impacts. Figure 3 shows the anticipated route for a future potential effluent pipeline.

**FIGURE 1: PROJECT SITE LOCATION MAP**

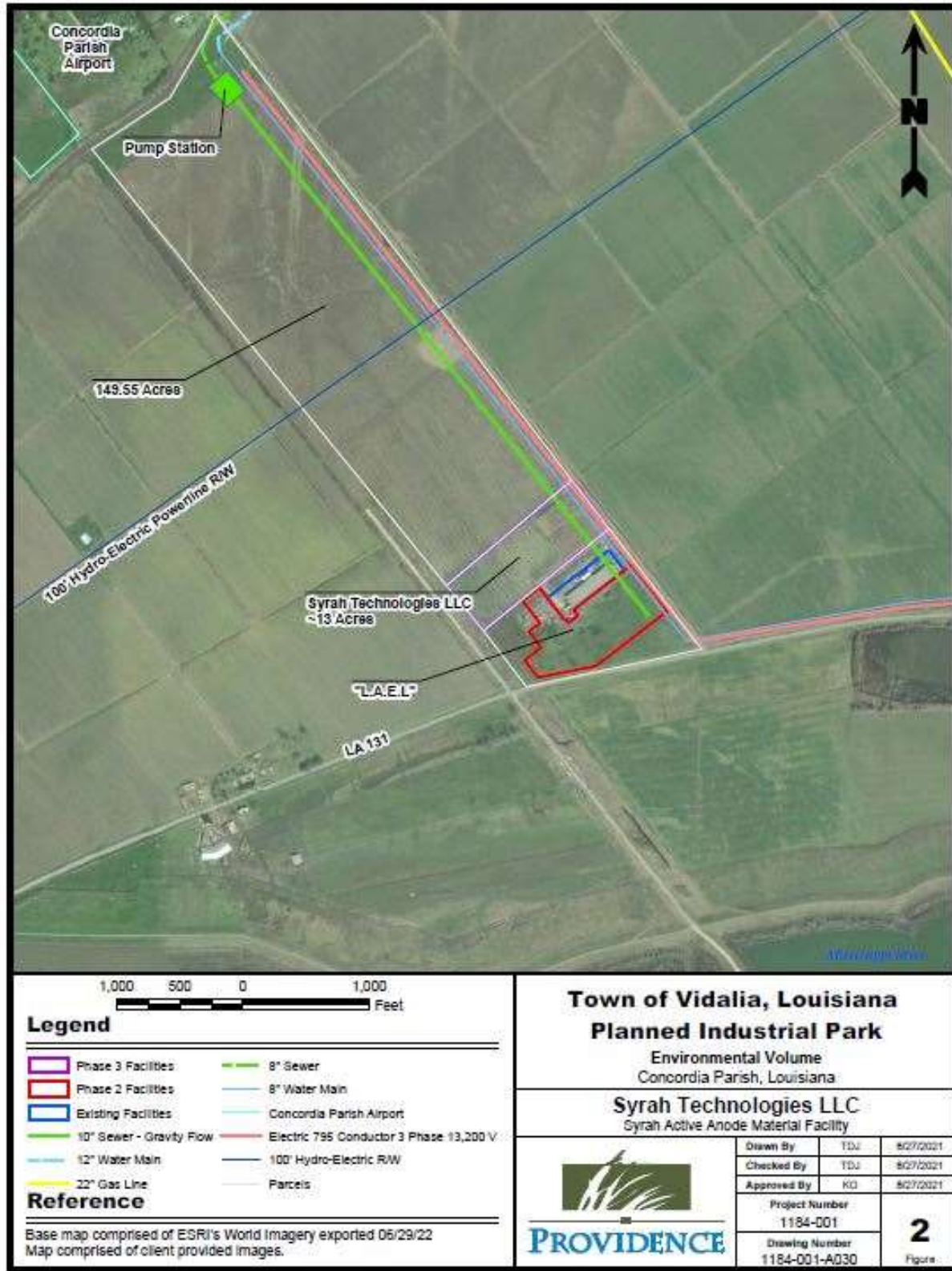


(b) (4)

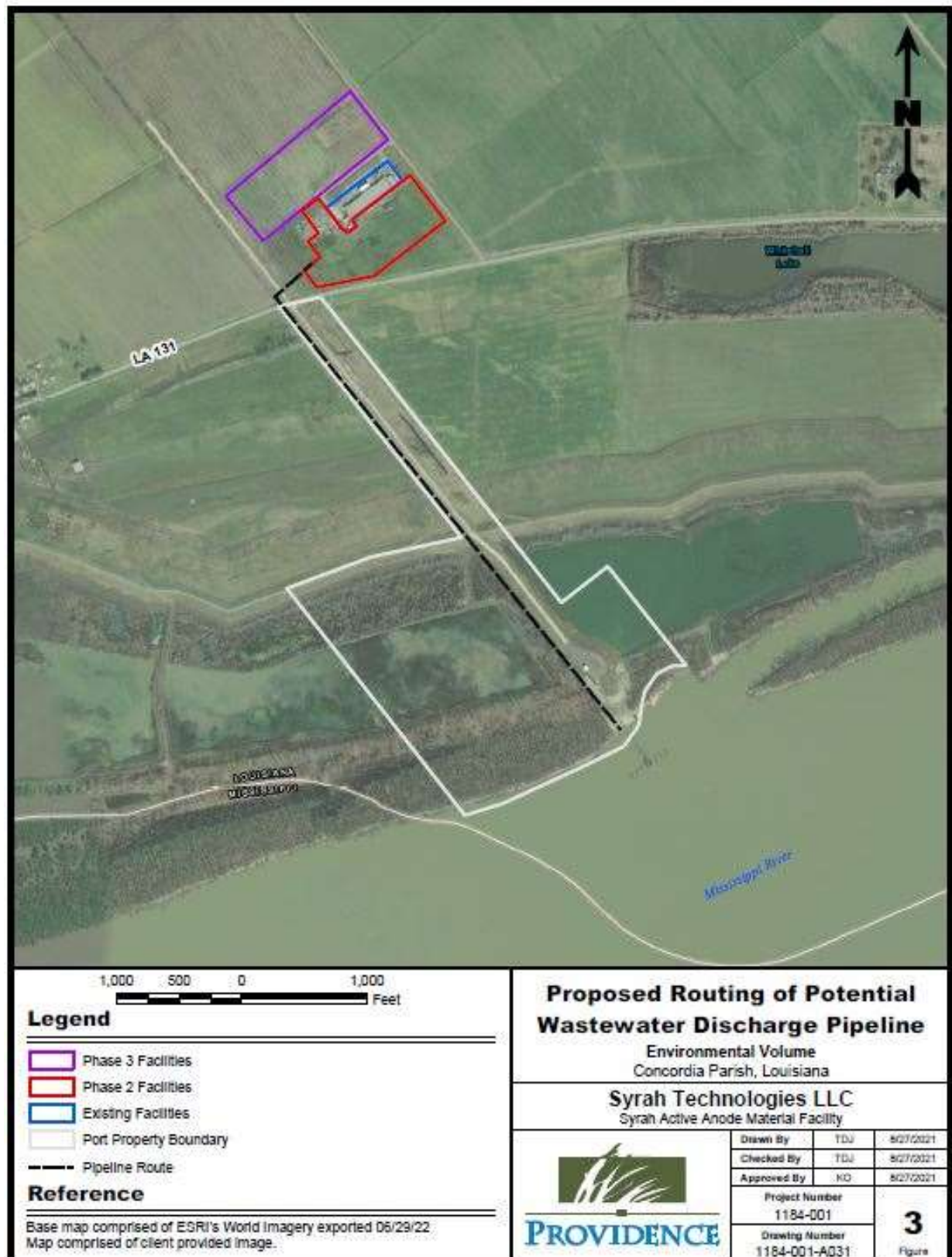
(b) (4)



FIGURE 2: TOWN OF VIDALIA, LOUISIANA PLANNED INDUSTRIAL PARK



**FIGURE 3: FUTURE POTENTIAL EFFLUENT PIPELINE**





Syrah Technologies' process for processing natural flake graphite to AAM consists of four steps: (1) milling and shaping, (2) chemical purification, (3) coating, and (4) carbonization (See Exhibit 2).

In the milling and shaping process, the raw feed material, flake graphite, is delivered in bulk bags to the plant and pneumatically transferred to feed storage bins. The flake graphite is then mechanically turned into spherical shapes (spheroidization) and classified based on the graphite particle size. (b) (4)

Following the milling processes, spherical graphite is purified via leaching with a dilute solution (b) (4). This removes the graphite impurities and increases the spherical graphite grade to  $\geq 99.95\%$  carbon content. (b) (4)

(b) (4). The graphite produced in this stage of the process is referred to as purified spherical graphite (PSG). (b) (4)

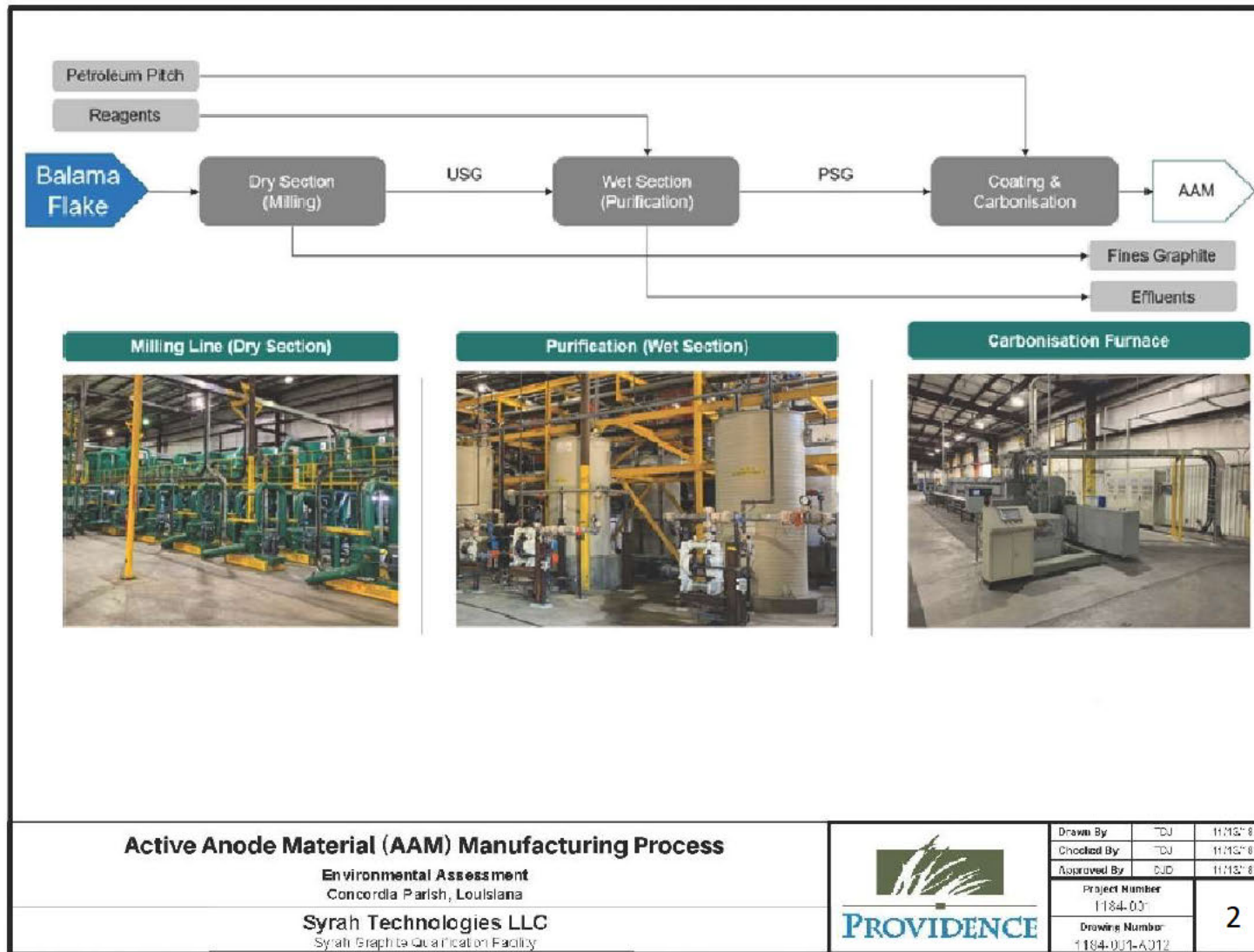
In the coating and carbonization process steps, PSG is first coated (b) (4)

(b) (4) (CLP) product. The carbonization (b) (4) Coated PSG is loaded into graphite crucibles and then conveyed to the carbonization furnace where the crucibles move through a series of heating zones (b) (4).

The CLP product as it exits the furnace typically (b) (4)

(b) (4) CLP product. The final CLP product (up to 45,000 metric tons per year) is then packaged in supersacks for shipment to customers. (b) (4)

## EXHIBIT 2: ACTIVE ANODE MATERIAL (AAM) MANUFACTURING PROCESS



***b. Alternatives to the Proposed Project***

Syrah Technologies did not consider alternative processes to their intended four-step process for converting graphite flake material to AAM. Syrah Technologies' process is proven to generate material that meets or exceeds the specifications for AAM in lithium-ion batteries. Natural graphite flake will be mined and processed to a concentrate at Syrah Group's Balama operation in Mozambique and shipped via ocean going vessel and transported to the proposed facility. Syrah Technologies can control the source, quality, and quantity of material to be processed at the facility. With the Town of Vidalia port expansion, Syrah Technologies' can minimize truck-borne shipments. There is no other process that would afford more environmental benefit than what Syrah Technologies has proposed.

Relative to alternative sites for the Phase 3 expansion, the 13-acre tract north of the existing Vidalia facility is the most practical and least environmentally impactful location for the Phase 3 expansion, as the site:

- currently adjacent to Vidalia and the Phase 2 expansion,
- is owned by Syrah Technologies,
- has been impacted by intensive agricultural practices,
- is located across LA 131 from the Port of Vidalia and is a short distance from the Port of Natchez, which facilitates Syrah Technologies' plans to barge container loads of inbound graphite raw material from New Orleans and to export container loads of final product destined for overseas markets through New Orleans (the expansion of the Port of Vidalia includes dock structures that can support the offloading of containers)
- has an easement to accommodate the effluent discharge pipeline for wastewater to the Mississippi River,
- supports the ability to leverage the utility infrastructure operated by the Town of Vidalia to the site, including gas, water supply, sewer, and electricity, and
- will continue to be used for product development and production campaigns of qualification material, making it impractical to relocate the current facility to another location.

The only true alternative to the proposed project is the no-action alternative, whereby Phase 3 is not constructed and operated. The no-action alternative would avoid the environmental impacts associated with the project; however, not constructing the expansion would not meet the growing demand for batteries for electric vehicles, energy storage, and other applications. Additionally, it would not meet the spirit of the Energy Independence and Security Act of 2007. The Phase 3 expansion is not anticipated to have a significant adverse impact on the environment and would provide environmental benefits through the reduction and displacement of vehicle fuel consumption and exhaust emissions.

### 3. Existing Environment

#### a. Land Use

Current land use on the proposed 13-acre site is a mowed, maintained fallow former agricultural field that supports overflow parking for the existing Vidalia facility. Figure 2 shows water lines, transmission lines, LA 131, and the Mississippi River in relation to the Vidalia site. Surrounding land is predominantly agricultural, even that which is part of the Town of Vidalia Industrial Park, except for the Concordia Parish airport, located north of the industrial park.

#### b. Atmospheric Conditions/Air Quality

Louisiana is located between the Gulf of Mexico and the southern end of the relatively flat plains of central North America. The state is exposed the warm, moist air over the Gulf of Mexico and the drier continental air masses, which are cold in the winter and warm in the summer (NOAA, 2022). Louisiana's climate is characterized by relatively short and mild winters, hot summers, and year-round precipitation.

The Vidalia facility is in Concordia Parish, Louisiana, which is in the Monroe (Louisiana)-El Dorado (Arkansas) or AR LA Federal Air Quality Control Region (AQCR) as defined in 40 Code of Federal Regulations (CFR) Part 81.

Air quality is measured by the types and levels of pollutants in the air. The United States Environmental Protection Agency (EPA) has established allowable concentrations and exposure limits for various "criteria" pollutants called the National Ambient Air Quality Standards (NAAQS). These pollutants include (b) (4)

The EPA identifies areas that do not meet the NAAQS for the criteria pollutants and designates them as "nonattainment" areas in accordance with the Clean Air Act Amendments of 1990 (CAAA of 1990). Concordia Parish is listed as in attainment with the NAAQS.

#### c. Hydrologic Conditions/Water Quality

The Vidalia Canal and Mississippi River are the primary surface water bodies in proximity to the site. Site process water is from the City of Vidalia. Wastewaters are either treated by the Town of Vidalia (sanitary wastewater) or discharged by the Town of Vidalia to the Mississippi River. Discharge to the Mississippi River is to Subsegment 070101 of the Mississippi River Basin, which is presently not supporting its designated use of Primary Contact Recreation. This is attributed to fecal coliform bacteria exceeding standards.

There are no unique aquatic habitats or recreation areas on or adjacent to the project site. Should the effluent discharge pipeline alternative be implemented, the pipeline would extend

into the Mississippi River. A pipeline would cross the levee and batture, the seasonally flooded wetland area between the Mississippi River and the levee.

Most of the water use in Concordia Parish is supplied from groundwater sources ([https://wise.er.usgs.gov/dp/pdfs/WaterUseinLouisiana\\_2015.pdf](https://wise.er.usgs.gov/dp/pdfs/WaterUseinLouisiana_2015.pdf)). Surface water use amounts to less than half the daily withdrawals, of which similar amounts are used for both power generation and rice irrigation. The top three uses for groundwater, in order of largest withdrawal rate, are general irrigation, rice irrigation, and public supply. Groundwater withdrawals in Concordia Parish are from the Mississippi River Alluvial Aquifer, which is not a sole source aquifer.

The Vidalia site lies in Zone X, per Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 220053 0230B, which is outside of the 500-year floodplain. No floodplain impacts are anticipated.

#### ***d. Geologic/Soil Conditions***

Per the Natural Resources Conservation Service (NRCS) and the US Department of Agriculture's (USDA's) web soil survey, Concordia Parish lies in the Mississippi River Alluvial Valley, bounded on the east entirely by the Mississippi River. Generally, exposed sediments on the surface are a product of Mississippi and Red River alluvium from the Holocene Age. Elevations range from 30 to 65 feet above mean sea level; slopes are typically less than one percent.

The Town of Vidalia Industrial Park is comprised of five soil types: Bruin silt loam, Commerce silt loam, Commerce silty clay loam, Sharkey clay, and Tunica-Sharkey complex (<https://websoilsurvey.sc.egov.usda.gov>). All five are considered prime farmland soils. Sharkey clay is given a rating of over 90% reflecting the percentage of soil units that would be classified as hydric. Tunica-Sharkey complex has a hydric rating percentage of 40%. The remaining three soil types are rated under five percent for units rated as hydric soils. The VAM facilities are located on or proposed on a 38-acre portion of the industrial park underlain by Bruin silt loam.

#### ***e. Vegetation and Wildlife Resources***

The Phase 3 Vidalia site is surrounded by agricultural land or the existing Vidalia facility on all four sides. Natural habitat exists along Vidalia Canal to the north and across the Mississippi River levee to the south. Phase 2 will result in the development of most of the remaining mowed maintained former farmland on the 25-acre tract. Phase 3 will mostly occupy the 13-acre tract to the north of the existing facilities, which is also mowed maintained former farmland.

A search for critical habitat and protected species was conducted using the United States Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS). No critical habitats were identified and only two protected species were listed for Concordia Parish in the project area, the threatened northern long-eared bat (*Myotis septentrionalis*), and the



endangered fat pocketbook mussel (*Potamilus capax*). One bird of conservation concern, the red-headed woodpecker (*Melanerpes erythrocephalus*) was noted as potentially present during the month of July. One candidate species, the Monarch butterfly (*Danaus plexippus*), was identified, also with no critical habitat.

*f. Socioeconomic Conditions*

Syrah Technologies' Vidalia site is in rural Concordia Parish within the Town of Vidalia Industrial Park, which is surrounded by agricultural lands, bounded to the south by LA 131 and the Concordia Parish Airport to the north. The nearest hospital, Promise Hospital of Miss Lou is located approximately 3.7 miles east of the site, and the nearest school is Vidalia Junior High located approximately 3.4 miles east of the site. General demographic indicators for the parish the VAM are presented in Table 1.

**Table 1: Demographic Indicators for Concordia Parish and the VAM**

Demographic Indicators	3-Mile Radius from VAM	Concordia Parish Value	State Average	EPA Region Average	USA Average
Demographic Index	35%	48%	40%	44%	36%
People of Color Population	27%	43%	41%	52%	39%
Low Income Population	44%	54%	39%	37%	33%
Unemployment Rate	3%	UA	6%	5%	5%
Linguistically Isolated Population	0%	0%	2%	6%	4%
Population with Less Than High School Education	20%	23%	15%	16%	13%
Population Under 5 years of age	5%	6%	7%	7%	6%
Population over 64 years of age	14%	16%	15%	13%	15%

Note: Unemployment rate for Concordia Parish was not available through EPA's EJScreen. Data is based on the US Census Bureau's American Community Survey 2015 to 2017 estimates.

As demonstrated by the data in Table 1, the larger buffer area of Concordia Parish presents with a higher rate of both populations of people of color and low-income populations than the region immediately surrounding the site. This demonstrates that the general area most affected by VAM is well within the range of the normal values of the parish. Additionally, with an unemployment rate of three percent, the Vidalia site area is below that of the state or region.

#### ***g. Historic/Cultural Resources***

A review of the Louisiana Department of Culture, Recreation, and Tourism's Office of Historic Preservation online map search did not uncover any known cultural resources, nor did the use of EPA's NEPAAssist tool, which also noted no known tribal resources.

A Phase I Cultural Resources Survey of the Vidalia property, involving background research, review of previously recorded cultural resources, review of previously completed cultural resources investigations and standing structure surveys, and an archaeological field survey was completed on September 21, 2021. Six previously recorded archaeological sites were within a one-mile radius of the Vidalia site. Five of these sites were determined ineligible for listing [National Register of Historic Places (NRHP)]. One site was listed as undetermined relative to eligibility, but is located 1,475 meters southeast of the Vidalia site, south of White Hall Lake. Of the 111 shovel test excavations attempted during the archaeological field investigation, 96 were negative for cultural material, one was positive for cultural material, and 14 tests were not excavated due to obstructions (roads, levees, underground infrastructure, gravel, or water). The singular positive test, located near LA 131, yielded glass fragments in the subsurface layers. This isolated find was determined ineligible for listing due to its impacted/destroyed condition (resulting from years of agricultural impact), and lack of historical significance.

#### ***h. Visual Resources***

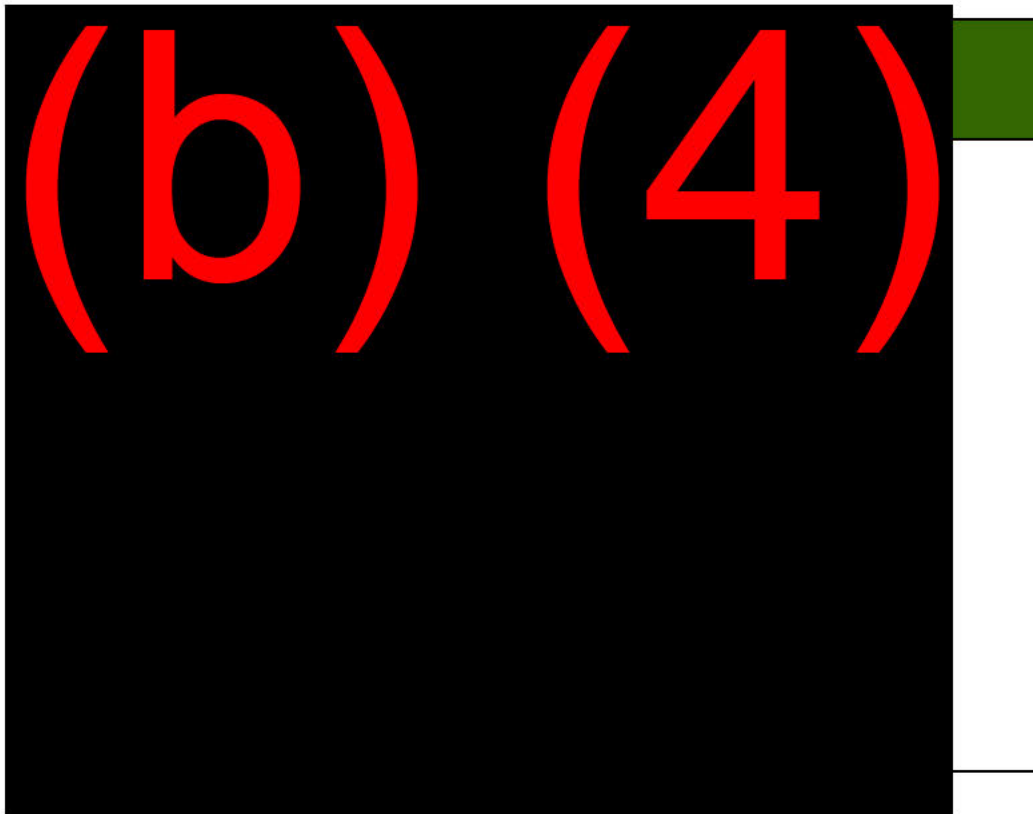
The Vidalia facility is in predominately rural Concordia Parish within the Town of Vidalia Industrial Park. Views to the north, south, east, and west are of agricultural land. Views to the south across LA 131 include the main line Mississippi River levee, which lies south of the agricultural land south of LA 131. No aesthetic landscaping is present on the 38-acre site.

#### ***i. Health and Safety Factors***

Vidalia's existing Spill Prevention Control and Countermeasure Plan (SPCC), which covers chemical management, routes of possible spills, spill prevention, and spill handling measures, will be expanded to address the larger scale operations.

Presently, the Vidalia Phase 1 qualification plant operates with an exemption from air permitting regulations. Current potential emissions from the qualification plant are presented in Table 2.

Table 2: Current Potential Air Emissions from Syrah Technologies' Phase 1 Qualification Plant



(b) (4)

The Vidalia site is surrounded by agricultural land, in proximity to the Concordia Parish Airport and other agricultural operations. Noise is present in the general area from the existing Vidalia operations, airport operations, roadway noise, and agricultural activities.

The Town of Vidalia presently receives sanitary wastewater from the Vidalia Phase 1 facility. Phase 2 will result in an increase in wastewater both contact stormwater and sanitary wastewater routed to Vidalia for treatment and/or discharge. Stormwater collected in secondary containment areas constructed during Phase 2 and the subsequent Phase 3 will be inspected for visual evidence of a sheen or other contamination prior to being released to the Town of Vidalia. Should any visual evidence of contamination be present, stormwater in secondary containment will be pumped out by a third-party contractor and disposed off-site at an approved facility.

## **B. ENVIRONMENTAL IMPACTS**

### **1. Land Use**

Twenty-five acres of the Vidalia site is developed and/or under development. Phase 3 involves use of an additional 13-acre tract immediate north of the existing Vidalia site. Both tracts

supported intensive agriculture operations and were previously impacted. Phase 2's layout may change with the proposal for Phase 3 as there will be additional equipment required for Phase 3's increase in production. No adverse impacts to land use are expected. It should be noted that the EA with FONSI for Phase 2 did not require an analysis of land use based on the premise that Phase 2 would not adversely affect land use.

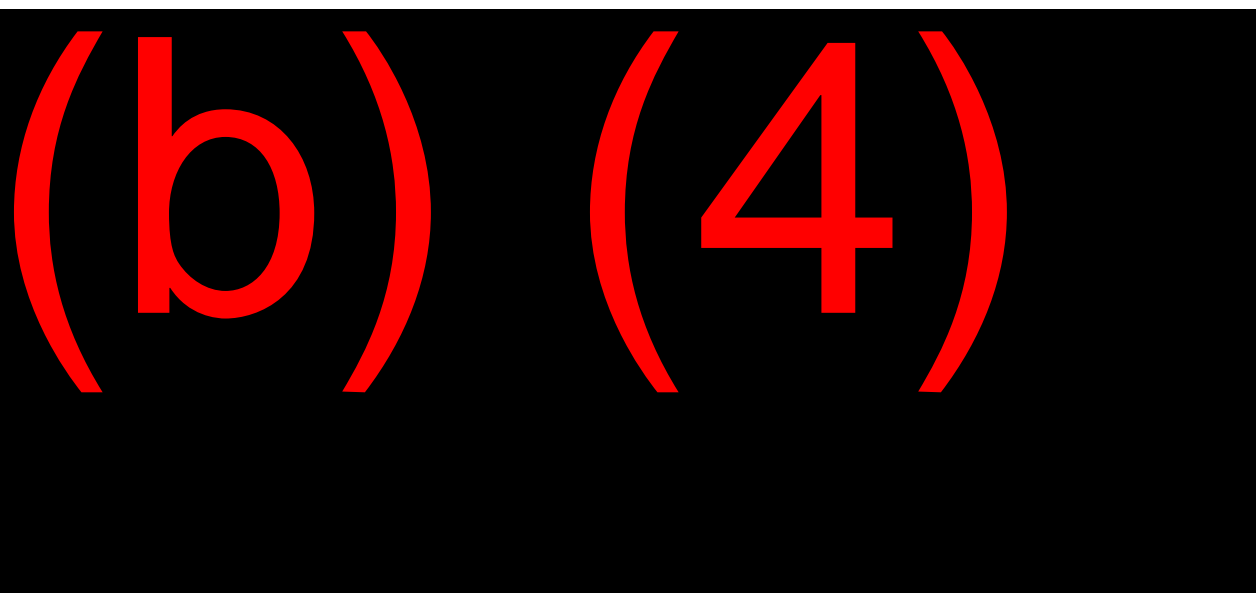
Should Syrah Technologies deem it necessary to acquire additional land for the storage of natural graphite flake, land to be acquired would be adjacent to the 38-acre Vidalia site, within the Town of Vidalia Industrial Park, and be former agricultural land permitted for commercial/industrial development with existing infrastructure. No adverse impact to land use would be expected.

Should Syrah Technologies have the need to install their own effluent pipeline, an easement exists along the Port of Vidalia's access road to allow the pipeline to be installed on impacted property for the majority of its route. Additionally, the new docking facilities would allow the pipeline to extend to the Mississippi River within an impacted area and potentially on an established dock. No adverse impact to land use would be expected from the implementation of this alternative, as the Port of Vidalia would have impacted the land to expand port operations.

## **2. Atmospheric Conditions/Air Quality**

In November 2021, Syrah Technologies received a Minor Source Air Emissions Permit from the Louisiana Department of Environmental Quality (LDEQ) covering expected air emissions from the Phase 2 expanded facility in combination with those from the existing qualification plant.

Criteria pollutants expected to be emitted from Phase 2 include particulate matter (PM10 and PM2.5), SO2, NOx, CO, and volatile organic compounds (VOC). Several toxic air pollutants will also be emitted in minor quantities. Table 3 presents anticipated air emissions from the Phase 2 expansion.





(b) (4)

CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particulate matter with diameters 10 microns and less; PM<sub>2.5</sub> = particulate matter with diameters 2.5 microns and less; SO<sub>2</sub> = sulfur dioxide; VOC = volatile organic compound

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Phase 3 will increase production from 11,250tpa to at least 45,000tpa, adding at least 33,750tpa to the proposed Phase 2 facility. There are no new pollutants associated with the expansion to Phase 3, but the level of existing emissions will increase. Table 4 presents anticipated air emissions from Phase 3.

(b) (4)



(b) (4)

Controls to be implemented during Phase 2 and Phase 3 operation to minimize potential air quality impacts include:

(b) (4)

(b) (4)

(b) (4)

(b) (4)

The above estimates are based on EPA factors and vendor guarantees. Syrah Technologies has recently conducted stack testing of particulate matter indicating that emissions from the grinding, shaping, and polishing of raw materials is much less than the vendor guarantee; this indicates that actual offsite impacts are and will be less than those predicted. Further, Syrah Technologies is exploring the possibility of incorporating a new dust collector technology to further reduce the air quality impacts in the surrounding area.

Fugitive dust emissions during construction may temporarily impact air quality at the Vidalia facility; however, these impacts would be minor and occur only during active construction. Per the SWPPP, controls would be implemented to minimize fugitive dust emissions during construction such as watering as needed and the use of temporary construction entrances.

Because of the location of the Vidalia site and existing air quality conditions, the amount of anticipated air emissions, and the controls that would be implemented during construction and operation, impacts on air quality resulting from the Phase 3 expansion would not be significant.

#### Greenhouse Gas Emissions and Climate Change

The current science and study of the earth's climate now shows with 95 percent certainty that human activity is the dominant cause of observed global warming since the mid-20th century (IPCC 2013). Since the beginning of the industrial era circa 1750, human activities have increased the concentration of greenhouse gases (GHGs), primarily carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) in the atmosphere. The rising global temperatures have been accompanied by changes in weather and climate, e.g. changes in rainfall, resulting in more floods, droughts, or intense rain; rising sea levels, Arctic sea ice decline, as well as more frequent and severe heat waves (IPCC 2013). It is now well established that rising atmospheric GHG emission concentrations are significantly affecting the earth's climate (CEQ 2016).

#### Impacts Associated with GHG and Climate Change

The GHG emissions associated with the Phase 3 expansion would be minimal compared to the savings resulting from use of the AAM in EV automotive battery applications. The operation of the Vidalia Phase 3 facility would generate average annual CO<sub>2</sub>e emissions of (b) (4) per year from electric power delivered from the regional grid and per year from the combustion of natural gas. AAM would be utilized in anode for EV batteries, and Syrah Technologies provided that all the AAM produced would be sold directly to battery manufacturers / auto OEMs for use in light duty EVs.

The magnitude of potential annual reductions in gallons of petroleum will depend on the number of EVs utilizing Vidalia's AAM. The Vidalia facility is projected to produce approximately 10,000tpa of AAM by 2024 (maximum output of 11,250tpa of AAM), and Syrah Technologies' estimates that the Vidalia Phase 2 facility would produce AAM to support almost 300,000 EVs per year (US EV sales were 630,000 in 2021, according to SP Global). This number of EVs yields annual fuel consumption savings of approximately 100 million gallons of petroleum per year. With the expanded capacity of Phase 3, production of AAM would reach 45,000tpa. Syrah Technologies estimates over 1.2 million EVs per year could be supported once Phase 3 production is fully ramped up, with an annual fuel consumption savings of over 400 million gallons of petroleum per year.

The annual avoided CO<sub>2</sub> calculated from Phase 2's annual fuel consumption savings [(100 million gallons) multiplied by the EIA Fuel Emission factor of 19.54 lbs CO<sub>2</sub>/gallon for gasoline] would support a reduction of approximately 1,954,000 tons of CO<sub>2</sub> per year. the increase in capacity associated with Phase 3 would increase this number three-fold. In general, the potential benefits associated with reducing CO<sub>2</sub> emissions would support a reduction in greenhouse gas concentrations and reduce the associated climate change impacts (e.g. increases in atmospheric temperature, changes in precipitation, increases in the frequency and intensity of extreme weather events, and rising sea levels).

### 3. Hydrologic Conditions/Water Quality

On January 3, 2022, the United States Army Corps of Engineers (USACE) determined there are no jurisdictional wetlands or other waters of the US located within the 25-acre Vidalia site. This determination did not extend to the 13-acre portion proposed for Phase 3. No wetlands are anticipated on the Phase 3 site due to the similar nature of both the soil composition and hydrology of the two tracts. Syrah Technologies will conduct a wetland delineation to request a formal wetland determination on the additional 13 acres.

There are no permanent surface water features, and Syrah Technologies' does not own or operate any groundwater supply wells on site. All the water used at the Vidalia facility is provided by the Town of Vidalia. All discharges from the site are to the Town of Vidalia and treated and/or discharged through their existing permits.

In late December 2021, Syrah Technologies completed the development of its Stormwater Pollution Prevention Plan (SWPPP) for the construction phase of Phase 2. Syrah Technologies filed a Notice of Intent (NOI) for construction related stormwater discharge with the LDEQ on December 28, 2021. Utilization of best management practices and adherence to a SWPPP during and post construction and Syrah Technologies' existing Louisiana Pollutant Discharge Elimination System (LPDES) Multi-Section General Permit (MSGP) for storm water associated with industrial activities will minimize any migration of pollutants from the Vidalia facility to area waterways, including wetlands. The SWPPP and MSGP will be modified to accommodate Phase 3. In addition, all hazardous liquids associated with the Vidalia facility are contained inside the facility, in tanks, or in closed containers stored within secondary containment structures.

Since sanitary wastewater is treated by the Town of Vidalia, it is presumed that the project will not have an adverse impact on supply or quality of water in the Mississippi River. Utilization of best management practices and adherence to the SWPPP during and post construction will also minimize any migration of pollutants from the site to area waterways.

The Vidalia site lies in Zone X, per Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), which is outside of the 500-year floodplain. No floodplain impacts are anticipated.

Because of the current plans for municipal water use and wastewater treatment through the Town of Vidalia's municipal wastewater treatment facility, the absence of floodplains, stormwater control and treatment during construction and operation, and the control of onsite hazardous liquids, impacts on groundwater or surface water resulting from Phase 3 would not be significant.

#### **4. Geologic/Soil Conditions**

The construction and operation of Phase 2 will essentially occupy more than 75 percent of Syrah Technologies' 25-acre property. Reconfiguring the equipment layout and additional equipment associated with Phase 3 will require expanding the total land area supporting facility infrastructure to 38 acres. Regardless, no measurable impacts to geology or soil conditions are expected with Phase 3 nor were they addressed in the EA with FONSI for Phase 2, as no adverse impact was expected.

#### **5. Vegetation and Wildlife Resources**

There are no critical habitats, natural vegetation communities, or fence line communities on the 38-acre project site. Construction would have no effect on the two protected species listed for Concordia Parish or the migratory red-headed woodpecker because the project site does not contain potentially suitable habitat. Although the area could be used as foraging habitat for the bat, Phase 3 would not change the overall nature and quality of foraging habitat in the area.

Consultations with the USFWS pursuant to Section 7 of the Endangered Species Act using the ECOS Information for Planning and Consultation (IPaC) system and follow up correspondence indicated that Syrah Technologies is in compliance with northern long-eared bat final 4(d) rule, which focuses on protecting the bat's sensitive life stages in areas affected by white-nose syndrome and construction at the project site would have no effect on the fat pocketbook mussel, and therefore, have no effect on the listed threatened or endangered species or on designated critical habitat.

Should the alternative to construct an effluent discharge line to the Mississippi River be further considered, additional consultation with the USFWS would be required to ensure the decision of "no effect" as it relates to the fat pocketbook mussel remains valid. It is noted that Syrah Technologies is working closely with the Port of Vidalia relative to the port's expansion and the availability of their facilities. An easement exists that would allow installation of an effluent pipeline in/adjacent to the right-of-way of the access road to the port, with construction of dock structures, the pipeline could potentially be suspended in the water column using one the port's new dock structures. Should Syrah Technologies come to an agreement with the Port of Vidalia to allow a future effluent line to be installed onto one of their docks, no impact would be expected, as all impact to the batture habitat as well as mitigation for that impact would have already occurred with the permitted port expansion. No further consultation with the USFWS relative to the fat pocketbook mussel would be required.

## 6. Socioeconomic Conditions

### a. Socioeconomics

AAM is a critical material for anodes in lithium-ion batteries, which, are used for EVs, energy storage, and portable appliance applications. Syrah Technologies' Phase 2 commercial scale facility will require (b) (4) produce 11,250tpa of AAM; Phase 3 is expected to require (b) (4) to produce a total of at least 45,0000tpa of AAM.

Minimal additional utilities (water, wastewater, natural gas, and electricity) are required to support the facility expansion. To access the Vidalia facility, additional entrances will be installed at the east and west ends of the property to facilitate the flow of additional vehicle traffic. The peak construction work force is expected to reach approximately 300 people.

Beneficial socioeconomic impacts would occur from increased employment opportunities, tax revenue generation, and direct and indirect spending in the local economy.

Due to the moderate peak-construction and operational workforce required for as well as the intent to utilize the capable and skilled local workforce, no substantial immigration of people to the local area is anticipated. As such, adverse impact to local housing, road networks, schools, hospitals, emergency services, or utilities is not expected.



### ***b. Environmental Justice***

Environmental justice (EJ) refers to a federal policy established by Executive Order 12898 (59 Federal Register 7629) under which each federal agency identifies and addresses, as necessary and appropriate, disproportionately high and adverse human health or environmental effects of its actions on minority or low-income populations. The intent is to promote nondiscrimination in federal actions to provide minority and low-income communities equal access to public information regarding a federal action, and to provide an opportunity for public participation in the evaluation of a federal action in matters relating to human health and the environment.

The EPA uses the USCB definition of minority populations, which is a population of people who are not single-race white and not Hispanic, to assess EJ related impacts. Minority populations include persons who are African American, Asian American, American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander, or Hispanic (regardless of race). A low-income population should be identified in an affected area when the percentage with incomes below the poverty level either exceeds 50 percent or is meaningfully greater than in the general population of the larger surrounding area (CEQ 1997; EPA 1998).

Demographic indicators for the parish and within a three-mile radius from the VAM are shown in Table 1. The data for Concordia Parish, provided by reference as a buffer to the smaller project area, reflects that some communities in the parish could be considered environmental justice communities, but these communities do not appear present in proximity to the VAM.

In addition to the relative demographic data for the project area, analysis of impacts to EJ communities also considers potential environmental quality issues. Utilizing EPA's EJScreen web-based analysis tool, specific environmental indicators were also considered for the general population in Concordia Parish and within a three-mile radius of the project site. Table 5 presents data relative to three environmental indicators that were utilized to consider potential impacts on local and regional communities. It should be noted that there are 12 environmental indicators that the EPA provides to assess potential impacts, only those that are common to the facility are presented in Table 3. The remaining environmental indicators include:

- Diesel Particulate Matter,
- Ozone,
- Traffic Proximity,
- Lead Paint,
- Superfund Site Proximity,
- RMP Facility Proximity,
- Hazardous Waste Proximity,
- Number of Underground Storage Tanks per square mile, and
- Proximity/Concentration of Wastewater Discharges



**Table 5: Environmental Indicators for Concordia Parish and the VAM**

Environmental Indicators	3-Mile Radius from VAM	Concordia Parish Value	State Average	EPA Region Average	USA Average
Particulate Matter (PM <sub>2.5</sub> in µg/m <sup>3</sup> )	8.64	8.25	9.22	9.32	8.74
NATA Cancer Risk (lifetime risk per million)	30	35	41	32	29
NATA Respiratory Hazard Index	0.40	0.47	0.45	0.37	0.36

Note: Data set is from EPA's 2017 Air Toxics Update.

Based on the data presented in Table 3, particulate matter and the National Air Toxics Assessment (NATA) lifetime cancer risk are below the state average, and for particulate matter, below the regional and US average as well. The respiratory hazard index provides a baseline for exposure to hazardous air pollutants and demonstrates local air quality is lower than the state average, but the parish average is just slightly above the Louisiana average.

These data reflect that the potential affected area within three miles of the project site does not have representative EJ communities or suffer from air quality that is appreciably diminished. While the whole of Concordia Parish does support some EJ communities, as does the Census tract in which the Vidalia facility is located, these areas are not expected to receive direct impacts from the Phase 3 expansion. Additionally, by virtue of the issuance of the Minor Source Air Permit by the LDEQ for Phase 2, emissions are not expected to result in degradation of air quality, locally or within Concordia Parish. Phase 3 permitting would also presume no degradation of air quality.

In addition to EO 12898, a new EO, EO 14008 Tackling the Climate Crisis at Home and Abroad, was signed and created the government wide Justice40 Initiative. Compliance with EO 14008 is discussed below.

The Justice40 Initiative created a goal whereby 40 percent of overall benefits from federal investments flow to disadvantaged communities. A screening tool was developed by the CEQ for use in determining compliance with Justice40. The Climate and Economic Justice Screening Tool (CEJST) was tested in the public arena through April 22, 2022, after which the tool is to be refined and streamlined. While this tool is still in development and not all potential features are available, a screening of the project in CEJST indicated that Census Tract 22029000300 in Concordia Parish is identified as disadvantaged regarding clean energy and energy efficiency, health burdens, and workforce development. Per the CEJST, the ranking is a result of:

- Poverty levels above the average 90<sup>th</sup> percentile (93<sup>th</sup> percentile),
- The number of persons at or older than 25 whose education level is less than a high school diploma (21%, the average is 10%), and

- Diabetes, heart disease, and low life expectancy all over the 90<sup>th</sup> percentile.

Data relative to education and poverty are associated with the 2015-2019 American Community Survey and health data is from the Centers for Disease Control and Prevention either from PLACES data compiled by between 2016 and 2019 or US Small Area Life Expectancy Estimates Project. Health data for diabetes and heart disease is a weighted percent of people that reported being told they had diabetes or heart disease by a health professional.

As the general project area in Concordia Parish has been identified as disadvantaged in three categories, use of federal funds in this area would be consistent with the Justice40 Initiative.

## 7. Historic/Cultural Resources

The results of the CRS previously mentioned found that Phase 2 expansion on the 25-acre site would have no adverse impacts on cultural resources for direct physical or visual effects on historic properties in the general project area. DOE consulted with the State Historic Preservation Office (SHPO) and received concurrence with the conclusions of the Phase I CRS that no historic properties would be affected on January 24, 2022. The 13-acre tract immediately north was not surveyed, however, due to the lack of structures on this portion of the site since the early 1900s, and the lack of cultural material on the adjacent 25-acre tract, no resources are anticipated.

### Native American Interests

In conjunction with the National Historic Preservation Act Section 106 historic and archeological review process, on September 03, 2021, DOE sent a request to the following Federally Recognized Tribes and Council for information on nearby cultural resources and for any comments or concerns they had on the potential for those resources to be affected by construction at the VAM:

- Apache Tribe of Oklahoma
- Choctaw Nation of Oklahoma
- Coushatta Tribe of Louisiana
- Jena Band of Choctaw Indians
- Mississippi Band of Choctaw Indians
- Muscogee (Creek) Nation
- Seminole Tribe of Florida

Following the submission of the letter, each Tribe was contacted via telephone to ensure receipt of the letter and to respond to any immediate questions or concerns. Written responses were received from the Muscogee (Creek) Nation and the Mississippi Band of Choctaw Indians. The Muscogee (Creek) Nation concurred and found No Effect in the project areas as of November 30, 2021, and the Mississippi Band of Choctaw Indians requested a copy of the Archaeological Survey which was sent on November 10, 2021. No impacts to Native American interests are expected.

## 8. Visual Resources

The project site is in predominately rural Concordia Parish within the Town of Vidalia Industrial Park. Views to the north, south, east, and west are of agricultural land. Views to the south across LA 131 include the main line Mississippi River levee, which lies south of the agricultural land south of LA 131. No aesthetic landscaping is present on the 38-acre site.

The existing Vidalia Phase 1 facility is, and the Phase 2 and Phase 3 expansions will be visible due to the agricultural nature of the surrounding landscape. Some views from residences will be obscured by the presence of large live oak trees and other trees located in association with the residences. The nearest residence is approximately one-half mile to the west.

Construction of the Phase 2 expansion will result in permanent visual changes to the Vidalia facility. New facilities will have an appearance consistent with the existing facility, which is already the dominant visual element in the immediate landscape. Phase 3 would not be expected to result in changes readily visible from surrounding areas due to its location behind Phase 2.

## 9. Health and Safety Factors

The Vidalia site is located within the Town of Vidalia Industrial Park, surrounded by agricultural land, and lies within a mile of the Concordia Parish Airport and intensive agricultural operations. The nearest residence is over one-half mile from the property, one and one-half miles from the nearest multi-residence residential area, and approximately two and one-half miles from active industrial facilities. The primary processes at the expanded facility are enclosed, minimizing exterior noise generation. It remains possible that the Phase 2 and Phase 3 expansions may introduce increased vehicular and plant-related noise into an environment that currently experiences noise from agricultural equipment, vehicular traffic, airplanes, and industrial noise.

Phase 3 would generate temporary noise during construction. Noise and sound levels would be typical of new construction activities and would be intermittent and temporary. Syrah Technologies will manage noise using best management practices (BMPs), such as limiting outdoor construction activities to daylight working hours (approximately 7 a.m. to 8 p.m.), use of mufflers on construction equipment, and complying with local noise ordinances.

Vidalia's existing SPCC, which covers chemical management, routes of possible spills, spill prevention, and spill handling measures, will be expanded to address the larger scale operations.

Because of the measures to address health and safety, including BMPs; compliance with federal, state, and local regulations and standards; plans for preventing chemical spills and potential mishandling of hazardous materials; and the facility's experience with handling and use of the same hazardous materials at the existing facility, adverse impacts on the health and safety of workers and the public from Vidalia Phase 3 construction and operation are not expected.

## 10. Solid and Hazardous Wastes

Syrah Technologies' Vidalia facility will generate two principal waste streams, process wastewater discharge and non-hazardous solid waste generated during the neutralization of acid species contained in the spent leaching solution discharge from the purification step of the manufacturing process.

The process wastewater stream will have a composition that is substantially similar to that of the existing qualification plant, which is a dilute solution of sodium chloride and calcium chloride in water. The Town of Vidalia currently accepts the discharge from Syrah Technologies' Phase 1 qualification plant into its municipal wastewater treatment facility and has committed to continue processing the wastewater effluent from Syrah Technologies' Vidalia facility for the Phase 2 and 3 expanded capacities of the commercial scale plant. Approximately (b) (4) per day of wastewater is expected to be discharged to the Town of Vidalia's treatment facilities under Phase 3. The Town's environmental consultants have previously determined that the municipal wastewater treatment facilities would be capable of processing this level of wastewater discharge.

The solid waste generated during the neutralization step at the back end of Syrah Technologies' purification circuit will also be of a composition like that of the Phase 1 qualification plant, consisting primarily of calcium fluoride. This solid waste is non-hazardous and Syrah Technologies' will continue its current practice of contracting with a reputable waste handling company, such as Veolia, to collect the waste material and transport it to a landfill permitted for non-hazardous waste. Approximately (b) (4) per day (wet cake) of this non-hazardous waste will be generated by the graphite purification process.

Because of planned waste management practices that are aligned with those of the existing Phase 1 qualification facility, including the handling of process wastewater in the Town's municipal wastewater treatment facility and the offsite disposal of non-hazardous waste, no adverse impacts are expected.

## 11. Impacts on Regional or Local Plans

Concordia Parish participates in FastStart®, Louisiana's customized recruitment, screening and development/delivery program for new and expanding companies. They are one of the first communities to become engaged in ACT WorkKeys® job assessment testing that matches work skills with job functions. Syrah Technologies' intent is to pull from the local force, which is compatible with these workforce training and business assistance programs.

The Town of Vidalia has municipally owned and operated electric, gas, and water infrastructure, in addition to Entergy Louisiana and the Concordia Electric Cooperative. Vidalia is the site of Louisiana's first hydroelectric power generator and the world's largest prefabricated hydroelectric facility (2022, CEIDD). No adverse impact is anticipated relative to the water and electricity needs of Vidalia's Phase 2 and Phase 3 expansion.



Access to the project site from the south is from D. A. Biglane Road, which is accessed from LA 131, from the north D.A. Biglane Road is accessible via Airport Road from US 84 East. No widening or modification of local access roads is anticipated to be necessary however, Syrah Technologies is installing additional entrances at the east and west ends of its property to facilitate the flow of additional vehicle traffic. The roads bordering the property are not heavily travelled, and minimal disruptions were observed during the previous qualification plant construction period. During periods of peak construction Syrah Technologies also plans to stagger the arrival and departure times of construction personnel to minimize the potential for local traffic disruptions. During ongoing operations associated with Phase 3 the total number of inbound shipments of raw materials and other process chemicals plus outbound shipments of products, byproducts, and solid waste is expected to be approximately (b) (4) per week, primary by barge. Adverse impact to area traffic is not expected.

### **C. POTENTIAL LIABILITY TO DOE OF EXISTING CONDITIONS AT THE SITE(S).**

A Phase I Environmental Site Assessment on three tracts associated with the Town of Vidalia Industrial Park was completed in May 2018. This report researched the potential for environmental liability concerns/hazardous materials concerns to exist on the 25-acre Vidalia site as well as adjoining properties extending north to the Vidalia Canal.

The Vidalia site and adjacent properties have been in agriculture production since the early 1900s. In 2008, a tire recycling business located on the 25-acre tract, constructing buildings that were later converted into the Phase 1 qualification plant. The tire recycler processed used tires into ground rubber and scrap metal for various uses. All recycled materials were transported offsite to their various end users. No evidence of recognized environmental conditions in connection with the entire 170 acres investigated was found. There is little potential for liability to the DOE at the Vidalia property or property to the north, which could be utilized in the event Syrah Technologies' needs to acquire additional land for graphite flake storage.

### **D. ABILITY TO MEET COMPLIANCE REQUIREMENTS AT THE SITE**

Table 6 provides the existing permits and approvals received by Syrah Technologies for current operations. The following text provides additional details relative to approvals received.

In November 2021, Syrah Technologies received a Minor Source Air Emissions Permit from the LDEQ covering expected air emissions from the Phase 2 expanded facility in combination with those from the existing qualification plant.

In late December 2021, Syrah Technologies completed SWPPP for the construction phase of Phase 2. Syrah Technologies filed a NOI for construction related stormwater discharges with the LDEQ on December 28, 2021 with coverage provided on December 29, 2021. Syrah Technologies operates under a MSGP for stormwater discharges issued on December 12, 2018.



On January 3, 2022, the USACE provided their determination that there are no jurisdictional wetlands or other waters of the US located within the 25-acre Vidalia site.

The USFWS confirmed a determination of “no effect” on protected species known or suspected to inhabit in Concordia Parish in proximity to the Vidalia site.

As Syrah Technologies has obtained the permits and permissions necessary to construct and operate the Phase 1 qualification plant and the Phase 2 expansion, modification requests for the existing permits would be expected to be submitted and the permits reissued or modified.

(b) (4)

**E. EXPERIENCE AND APPROACH TO THE IDENTIFICATION AND RESOLUTION OF ENVIRONMENTAL ISSUES**

**1. Education/Experience of Key Project Members**

Name	Project Role	Company	Qualifications	Years' Experience
Anne Duncan	VP USA Processing Operations	Syrah Technologies	PhD, Chemical and Materials Engineering, Masters of Applied Science, Engineering, BS Environmental Science	25

(b) (4)

## 2. Relevant Project Experience

Below are three examples of Providence Engineering's relevant experience managing and conducting projects of similar size, complexity, including obtaining permits.

### SHINTECH LOUISIANA, LLC

Iberville Parish, LA

Environmental Compliance, Permitting, and Support

2005-present

Providence conducted all environmental activities required for the construction and operation of a \$2 billion chemical manufacturing facility in Iberville Parish, Louisiana. Since initial facility permitting, Providence has continued to coordinate all environmental activities for ongoing compliance, facility expansions, and new facility additions. With the most recent new facility permitting, Providence conducted the first interpollutant trading (IPT) modeling in Louisiana involving a high level of interaction and coordination with the state regulators.

RELEVANT TASKS
<ul style="list-style-type: none"><li>• Section 10/404 Wetlands Permit</li><li>• PSD/Title V Air Permits</li><li>• High-level Air Modeling</li><li>• Inter-Precursor Trading Modeling</li><li>• Water/Wastewater Permitting</li><li>• Storm Water Permitting</li><li>• SWPPP Development</li><li>• Site-Wide Air Modeling for Fence Line Air Standards Compliance</li><li>• Comprehensive Hazardous Waste Permitting</li></ul>

Shintech Louisiana, LLC (Shintech) owns and operates Shintech Plaquemine Plant 1 (SPP-1), Shintech Plaquemine Plant 2 (SPP-2), Shintech Plaquemine Plant 3 (SPP-3), and Shintech Plaquemine Ethylene Plant 1 (PEP-1). With each expansion project, Providence addressed Nonattainment New Source review and Prevention of Significant Deterioration (PSD) requirements, including emission reduction credit (ERC) and air dispersion modeling requirements. Each project required an extremely fast-paced schedule and excellent working relationships with the state and federal regulators to obtain the required permits in time for target construction dates. Each expansion

and new facility addition involved New Source Review (NSR) permitting and agency coordination to meet rigorous project deadlines. Providence continues to manage and service all Shintech's ongoing environmental and permitting needs.

#### Providence's responsibilities included:

- Phase I & II Environmental Due Diligence Site Assessments
- Clean Air Act Part 70, Title V, PSD, New Source Review, water quality assessments and LPDES industrial wastewater and construction stormwater permits, and RCRA Subtitle C "Part B" hazardous waste management permits
- State of Louisiana "public trust doctrine" Environmental Assessment Statement
- State of Louisiana environmental risk assessment ("RECAP")
- State of Louisiana groundwater protection certification



- Federal Clean Water Act wetlands delineation & Section 404 USACE permitting
- Federal threatened and endangered species protectiveness reviews
- SPCC plan/SWPPPs for construction and operational phases
- CAA chemical accidental release/risk management plan (RMP)
- RCRA hazardous waste management plan
- NHPA Section 106 Cultural Resources Phase I, II, and III assessments, surveys, and archeological data recovery (using sub-consultant)
- Public participation, including public meetings, public hearings, and community outreach

## BASF

### Ascension, Concordia, and East Baton Rouge Parishes, LA Environmental Compliance, Permitting, and Support

#### 2003-present

Providence has conducted **multimedia environmental permitting and compliance** for BASF at multiple facilities. BASF owns and operates an integrated chemical manufacturing facility in Geismar, Ascension Parish, Louisiana.

RELEVANT TASKS
<ul style="list-style-type: none"><li>• Hazardous Waste Delisting</li><li>• LPDES Renewal Application</li><li>• Title V &amp; PSD Permitting</li><li>• State Permit Application For Expansion</li><li>• TRI Reporting</li><li>• Minor Source Permit Modification</li><li>• Monthly Toxic Air Pollutants Tracking</li></ul>

**Solid and hazardous waste permitting and compliance (Geismar, Ascension Parish):** Providence performed an evaluation of listed hazardous waste stream for potential exclusion from the hazardous waste regulations. This project involved development sampling and analysis plan/quality assurance manual for initial sampling event, negotiation with LDEQ for reduced parameter list for subsequent sampling events, oversight of sampling events, data analyses, and preparation of a delisting petition. Successful delisting of the waste stream from the hazardous

waste regulations represented cost savings for the facility in waste disposal, equipment maintenance and energy costs.

**Water permitting and compliance (Geismar, Ascension Parish):** Providence prepared an LPDES renewal application that included calculating technology-based effluent limitations and water quality-based limitations to ensure the facility obtains the most representative and flexible permit for operations. **(Zachary, East Baton Rouge Parish):** Providence also prepared an LPDES renewal application, storm water pollution prevention plan, and storm water notice of intent for the BASF Zachary Site prior to closure. In addition, Providence conducts storm water inspections at the closed BASF Zachary Site. **(Vidalia, Concordia Parish):** Providence also prepared storm water pollution prevention plan and spill prevention control -spill prevention control and countermeasure plan for the BASF Vidalia Works facility.





**Air permitting and compliance (Geismar, Ascension Parish):**

Our team has supported multiple Title V renewals, modifications, and expansions at the various units at the Geismar Site. Support has included managing air permitting efforts for facility expansion projects and the preparation of Title V and PSD permit applications and BACT analyses for GHGs. **(Vidalia, Concordia Parish):** Providence also prepared

permit applications for the BASF Vidalia Works facility. Permitting efforts have included plant expansions and permit modifications to develop operational flexibility to allow the facility to produce a variety of specialty chemicals based on market demand. **(Zachary, East Baton Rouge Parish):** We prepared a minor modification application for BASF's synthetic organic chemical manufacturing facility located in Zachary. The application incorporated emissions from new manufacturing processes following changes in operations while also reconciling the list of tanks for the facility to remove all reaction and process vessels from the list of permitted tanks. Providence also prepared calculations for monthly tracking of toxic air pollutants from the facility per permit requirements.

**Sasol Chemicals (USA) LLC**

**Lake Charles Chemical Complex, Calcasieu Parish, LA**

**Environmental Compliance, Permitting, Support, and On-site Placement**

**2006-present**

RELEVANT TASKS
<ul style="list-style-type: none"><li>• Solid Waste Permit Renewal</li><li>• PSD/Title V Air Permitting</li><li>• Updating Closure/Post Closure Plan</li><li>• LPDES &amp; MSGP Compliance Assistance</li><li>• On-Site Placement</li><li>• Title V Modification Application</li><li>• Retroactive PSD Permitting</li></ul>

Providence has provided **multimedia environmental permitting and compliance** for Sasol Chemicals

(USA) LLC. The Sasol Lake Charles Chemical Complex (LCCC) is an organic chemical manufacturing complex which produces chemical products including ethylene, ethoxylates, paraffins, linear alkyl benzene, alcohols, hexane, octane, polyethylene, ethylene oxide, mono-ethylene glycol, and alumina.

**Solid and hazardous waste permitting and compliance:** Providence provided comprehensive

solid waste permitting assistance for renewal of five solid waste surface impoundments. The renewal

incorporated a review of the current the Groundwater Sampling and Analysis Plan, updates to the operational plan, and review and updates to the closure/post closure plan and costs.

**Water permitting and compliance:** Providence assisted with all aspects of water discharge permitting and compliance including LPDES monitoring requirements and permit conditions, cooling water intake structure monitoring requirements, whole effluent toxicity testing

requirements, clean technique monitoring requirements, and Multi-Sector General Permit (MSGP) water permitting and SWPPP requirements.

**Air permitting and compliance:** Providence prepared a Title V modification application in support of a debottlenecking project to increase specialized organic chemical production capacity at the facility, prepared a Title V and retroactive PSD air permit application, including greenhouse gas (GHG), NO<sub>x</sub>, and VOC BACT determinations, for the expansion of petrochemical operations and re-evaluated applicability of 40 CFR 63 Subpart FFFF – Miscellaneous Organic NESHAP (MON) to address sources that were thought not to be subject to this regulation.

Providence also provides on-site placement at Sasol. Mr. Chris Warwick, PG, is on a long-term assignment at Sasol Chemicals (USA) LLC, where he serves as Groundwater/RFI Coordinator within Sasol's Environmental Department.

### 3. Syrah Group's Environmental Plans/Policies/Procedures

Syrah Group is committed to partnering with our stakeholders for sustainability. We recognise that responsible management of the impact our business has on the natural environment can directly, indirectly, or cumulatively impact our stakeholders, including the livelihoods of our host communities. We achieve this by maintaining our strong Environmental, Social and Governance performance and seeking to continually advance our Sustainability systems and frameworks over time.

In line with our commitment to sustainable development, we aim to support the continuous improvement of environmental performance throughout our value chain by operating safely, ethically and responsibly, and requiring the same from our contractors and suppliers. We also encourage the same level of commitment from our customers and end-users by promoting the responsible use, reuse, recycling and disposal of our products.

Syrah Group strives for environmental excellence in line with international leading practice by:

- Pursuing alignment with leading practice Environmental, Social & Governance (ESG) frameworks including the International Council on Mining & Metals (ICMM) Mining Principles, the United Nations Sustainable Development Goals and the Global Reporting Initiative (GRI).
- Strong in-field visible leadership to identify and manage environmental risks, model desired behaviors and drive continual improvement.
- Maintaining ISO:14001 Environmental Management System certification at Balama and developing Vidalia in line with best practice health, safety and environmental standards.
- Working towards alignment with ICMM's new Global Industry Standard on Tailings Management, including robust tailings governance, water stewardship, stakeholder management and emergency preparedness.
- Clearly defining baseline environmental conditions, planned environmental impacts, mitigations and rehabilitation objectives.

- Adopting a risk and opportunities-based approach to environmental management to ensure material environmental exposures are captured in the Company's Risk Management Framework and managed effectively.
- Protecting biodiversity by respecting legally protected areas and species of conservation significance and partnering with our host communities and stakeholders to review our environmental and land management practices, to objectively and transparently monitor any associated impacts and to implement mitigation efforts via our integrated Environmental Management System.
- Acknowledging Climate Change is real, measuring our impact, and proactively minimizing our footprint via the effective management of energy, water, waste, recycling and pollution control strategies to reduce consumption, disposal and emissions from our operations.
- Engaging with our workforce and supporting them to acquire the skills to effectively identify, address, report and respond to environmental risks and hazards in the workplace.
- Setting goals across the organization with respect to environmental performance, measuring and reporting on performance against these goals, and supporting and challenging our people to achieve these goals and objectives.
- Delivering the Environmental Monitoring Program to assess, mitigate and report the environmental performance of our operations in line with legislative requirements.
- Acting with integrity with the community and key stakeholders with respect to environmental management practices and performance.
- Delivering continual improvement across our operations by subjecting our Environmental Management System, data and management practices to internal and external assurance processes at least annually and implementing remedial action where required.
- Reporting environmental performance outcomes regularly to the Sustainability Committee to ensure good governance, compliance, identification of material risks and alignment with the strategic objectives of the Company.
- Communicating this policy and our environmental performance against stated objectives to our stakeholders in an open, transparent, and accurate manner.

Syrah Group published quarterly Sustainability Reports, which reports on the Group's environmental principles & stewardship, practices, and performance, on its website (<https://www.syrahresources.com.au/sustainability-reports>)



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(04-2017)

OMB Number 1910-5175  
Exp. 11/30/2020

## OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

### ENVIRONMENTAL QUESTIONNAIRE

SECTION I. PROJECT SUMMARY	
Control Number:	2678-1523
Project Title:	Phase 3 expansion of Syrah Technologies' commercial-scale natural graphite active anode material facility in Vidalia, Louisiana
Applicant:	Syrah Technologies LLC
Other Participants (Subrecipients, Contractors, etc.):	
FOA Number:	DE-FOA-0002678
FOA Title: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing	

SECTION II. BACKGROUND AND INSTRUCTIONS
<p>Pursuant to the U.S. Department of Energy's National Environmental Policy Act (NEPA) implementing regulations (10 C.F.R. Part 1021), the Office of Energy Efficiency and Renewable Energy (EERE) is required to evaluate the potential environmental impact of projects that it is considering for funding. EERE must determine at the earliest possible time whether any proposed project qualifies for a categorical exclusion under 10 C.F.R. § 1021.410 or will require further environmental review within an environmental assessment or an environmental impact statement.</p> <p><b>You are required to answer the questions below for the <u>project as a whole</u>, including all work to be performed by the Recipient, its subrecipients and contractors, including any work outside of the United States. You may <u>not</u> limit your responses to work performed by the Recipient only unless instructed to do so by EERE.</b> In completing this questionnaire, you must provide specific information regarding the nature of your proposed project, including information on its size, operations, and the types and quantities of air emissions, wastewater discharges, solid wastes, land disturbances, etc. You should identify the location(s) of the proposed project and describe the activities that would occur at <u>each</u> location.</p> <p>The form should be completed and signed by the Principal Investigator for the project or another member of your organization who has sufficient knowledge of the project to answer the questions truthfully and accurately.</p> <p>Failure to fully and adequately complete this form will delay EERE's environmental review of your proposed project. Please note that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001.</p>



#### BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 60 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2-GTN, Paperwork Reduction Project (1910-1800), U.S. Department of Energy, 1000 Independence Avenue S.W., Washington, D.C. 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-1800), Washington, D.C. 20503.

### SECTION III. PROJECT EVALUATION

**1a. In the box below, please provide a brief summary of the proposed project activities. Describe physical activities, not goals and objectives. Specify if this project is part of a larger project or connected to another project.**

Example: The proposed project activities include the design, development, fabrication, and field testing of advanced biomass harvesting equipment. Design, development, and fabrication activities would occur at our research and development facility adjacent to our manufacturing plant in Dearborn, Michigan. Equipment testing would occur in various agricultural fields in the surrounding area over a two-year period.

#### *Explanation:*

The proposed activities include a definitive feasibility study, transition detailed engineering, detailed engineering, environmental permitting for of Vidalia™ Phase 3 expansion from 11,250 metric tons per annum (ftpa) to at least 45,000tpa AAM per annum. With these activities progressing, preparation and approval of the Final Investment Decision will be followed by activities associated with procurement and contract activities, construction, operational readiness, commissioning and ramp-up of production of the Vidalia Phase 3 facility.

The successful and well progressed Phase 2 expansion project in Vidalia anchors the Phase 3 activities. The establishment of a strong Syrah Technologies owners' team in Vidalia, Louisiana, demonstrated project management of the Phase 2 expansion project activities, and the proposed replication of Phase 2 in Phase 3 allows many of the project activities for Phase 3 to be specified. All project activities will occur in Louisiana. The Studies will be undertaken by a Tier 1 Engineering Services Provider in Baton Rouge, Louisiana. Construction, operational readiness, commissioning and ramp-up of production will be site based activities in Vidalia. The environmental application will be coordinated by the owners' team with both the Engineering Services Provider and Environmental Consultants in Baton Rouge, Louisiana, where the Permit will be issued by the Louisiana Department of Environment and Quality.

(b) (4)

**1b. Is there other Federal government involvement outside of EERE in any aspect of this project (e.g., funding, permitting, technical assistance, project located on Federally administered land)?**

Yes ☒ | No ☐

*If you checked "Yes," please list the agency, describe the nature of its involvement, and provide a point of contact at the agency, if known.*



*Explanation:*

The Louisiana Department of Environmental Quality (LA DEQ) will issue the environmental license for the Phase 3 expansion project and issued permits in connection with the Phase 2 expansion of Vidalia.

Syrah Technologies applied to US Department of Energy<sup>TM</sup> Loan Programs Office for an Advanced Technology Vehicles Manufacturing loan to fund Vidalia<sup>TM</sup> Phase 2 expansion. In April 2022, DOE offered Syrah Technologies a Conditional Commitment for a loan of up to \$107 million. Syrah Group and DOE are focused on completing negotiations and finalizing binding loan agreements in the third quarter of 2022.

**1c. Is the proposed project limited exclusively to intellectual, academic, or analytical activities?**

Intellectual, academic, and analytical activities include, but are not limited to:

- Literature searches and information gathering
- Data analysis
- Computer modeling
- Analytical reviews
- Conceptual design
- Feasibility studies
- Document preparation
- Data dissemination
- Paper studies

*You must answer “No” to this question if the proposed project involves any laboratory research and/or development, physical experiments, pilot-scale projects, demonstration projects, field tests, land-disturbance, construction, or similar activities.*

Yes ☐ | No ☒

*If you checked “Yes,” proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checked “NO” you must complete the entire questionnaire.*

*Explanation:*

The Vidalia Phase 3 expansion project will require both Desktop and Field Activities. The majority of the analytical activities are Engineering - including Definitive Feasibility and Detailed Engineering. Document preparation will include the preparation of the Environmental Application and the Full Investment Decision Business Case.

The 'field' activities which include Construction, Operations Readiness, Commissioning and Ramp-up will occur in Vidalia.

*If you checked “Yes,” proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checked “No,” you must complete the entire questionnaire.*

**2a. Is the project fully defined at this point (i.e., all sites and activities are known)?**

Yes ☒ | No ☐

*If you checked “No,” please describe those sites and/or activities/tasks that are yet to be defined and complete the remainder of the questionnaire to the best of your knowledge.*

*Explanation:*

The Phase 3 expansion project site location has been identified. With the competitive bid process, the analytic activity for Detailed Engineering will not be awarded until March 2023. However, best practices for an integrated team, local contractor firms, and strong incumbent from Phase 2 results in high confidence all studies will be undertaken in Baton Rouge, although the bid process will define the study consultancy.

Five Phase 3 trade-off studies were completed ahead of awarding the Definitive Feasibility Study Scope. As a result, the production increment, the project technology, and the product mix are defined. While these unit operations are defined, the Definitive Feasibility Study will determine the size of equipment.

**2b. In the chart below, please describe the following four types of identifying information concerning project activities to be performed:**

- (1) each location where work would be performed, including address or coordinates, names of facilities, and whether this is a Recipient, Subrecipient, or Contractor location;**
- (2) the nature of the location (e.g., urban, industrial, suburban, agricultural, university campus, manufacturing facility) and the current condition and/or use of the site;**
- (3) the types of activities to be conducted at that location;**
- (4) land administration (e.g., BLM, USFWS, DOD, state, private).**

<p>(1) <i>List all Locations Where Project Activities Would Occur (Facility Name and Address or Coordinates) and Indicate Recipient, Subrecipient, or Contractor</i></p>	<p>(2) <i>Nature of Location and Current Condition/Use</i></p>	<p>(3) <i>Activities to be Performed at Each Location</i></p>	<p>(4) <i>Land Administration</i></p>
Definitive Feasibility Study	Urban - 4949 Essen Lane, Baton Rouge, LA	Engineering Study - process plant definition, general layout, process design, cost estimate, and overall economics of the project	Private
Detailed Engineering	Urban - incumbent above	Engineering Study - Discipline engineering to complete the issues for construction design. Reaffirm project costs.	Private
Application for Environmental Permit	Urban - 1201 Main Street B, Baton Rouge, LA	Preparation of Permit - Convert emissions and effluent scope to an application for DEQ.	Private
FID Preparation, Approval	Industrial - Site	Preparation of Final Investment Decision documentation by the Syrah Technologies owners' team	Private

**2c. In the box below, please identify and describe: (1) any known or potential health and safety hazards to the public or project workers that may result from or are associated with your proposed project; and (2) any efforts that would be taken to mitigate these hazards. Describe individually for each site discussed in Question 2b.**

Example (Hazards): The project would involve the use and handling of various hazardous materials, including metals and industrial solvents. All such handling would occur in-lab, and our organization is dedicated to proper hazardous material handling and disposal practices, so the project activities that involve these materials would pose no risk to the public. All hazardous materials would be managed in accordance with Federal, state, and local environmental regulations.

Example (Mitigation): Existing corporate health and safety policies and procedures would be followed, including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. This would help ensure compliance with applicable health and safety regulations, and minimize health and safety risks to employees and the public.

*Explanation:*

Risk Registers are used to ensure acceptable risk for all project activities.

Syrah Technologies will operate Phase 3 using integrated health, safety, environment and quality standards, policies, and procedures compliant with OSHA.

For the Phase 2 expansion project, Syrah Technologies uses a project risk tool to manage all risks from concept to ramp up with the integrated Engineering Services Provider and Syrah Technologies owners' team.

For Operations, Syrah Technologies manages a site register. We have health standards and occupational hygienest to monitor and reduce risks in areas such as heat stress, dust, and noise. We use risk assessment tools in addition to training our teams in hazard recognition and critical risk management.

**2d. In the box below, please identify and describe any of the following that would be associated with the proposed project. Describe individually for each site discussed in Question 2b.**

- (1) any physical modification of existing facilities or construction of new facilities (this does NOT include modification to equipment, only facilities);**
- (2) ground disturbing activities;**
- (3) any change in the use, mission, or operation of existing facilities;**
- (4) installation or deployment of equipment outdoors including the area of disturbance, what currently exists at the site, the dimensions of the installation, any associated infrastructure, etc.**

Example 1: Physical modification of existing facilities and ground disturbing activities -To accommodate testing facilities necessary for the project, the current testing facility would have to be expanded by approximately 4,500 square feet.

Example 2: Change in use of existing facility - A room within our facility that has served as a dedicated wind tunnel would be modified to serve as an environmental test chamber. This would require the adaptation of the chamber's construction to partition off part of the room and seal it to allow generated environmental fluctuations within.



Example 3: Installation of equipment outdoors and ground disturbing activities - The proposed turbine location is on school property located in a previously disturbed area south of the existing school building and near the high school athletic facilities and fields. East of the school are two golf courses; south and north are single family residential neighborhoods; and to the west are two public park properties. There are wooded areas located on the school property to the south and west. The foundation of the wind turbine would be approximately 25 square feet with an additional 5 square feet of disturbance during construction. The foundation would be approximately 10-15 feet in depth. There would be a minor, temporary land disturbance adjacent to the proposed site for crane work and the tower staging area. Existing roads would be used to access the project location.

*Explanation:*

Syrah Technologies will construct Phase 3 on its existing site of 38 acres while the Phase 2 facility is operating.

The proposed site has been largely cleared, grubbed, and graded for Phase 2 construction, so there is minimal site preparation required. Due to topography, there will be piling activity needed.

Erection of buildings, tankage, tie-in to services, and lay-down can all be achieved at the currently owned grounds.

**2e. In the box below, please identify and describe any existing, modifications to, or new permits, licenses, or authorizations that would be required to perform project activities (such as environmental permits, operating permits, or drilling permits). Describe individually for each site discussed in Question 2b.**

Example 1: The project would generate small amounts of effluent waste which will be discharged into the Potomac River, requiring our organization to secure the requisite discharge permit pursuant to state and Federal regulations.

Example 2: The project activities would be conducted for the next three years. We would be required to replace our current solid waste disposal permit with an updated permit that may alter the nature of what and how we are permitted to dispose of solid waste.

Example 3: The project activities would take place in marine navigable waters and would require permits from the U.S. Coast Guard and the U.S. Army Corps of Engineers.

*Explanation:*

Air - Syrah operated the Phase 1 qualification plant with a small source exemption permit from LA DEQ. During Phase 2, the site has a minor source Air Emissions Permit (November 17, 2021). For Phase 3, Syrah Technologies will apply for an updated permit following confirmation of DFS.

Wastewater - Syrah discharge is handled by the Town of Vidalia. In Phase 3, we will consider an option where the discharge is made through the Port of Vidalia.

Stormwater - Phase 3 will be constructed under a LA Storm Water Multi-Sector Permit from LA DEQ with an updated Storm Water Pollution Prevention Plan.

**2f. In the box below, please list the estimated quantities of materials to be used (e.g., feedstock, chemicals, water) and produced by the project (e.g., biofuel). Describe individually for each site discussed in Question 2b.**

(b) (4)

**2g. In the box below, please quantify, to the extent possible, all emissions into the ambient air resulting from project activities. Indicate if the project site is within an attainment or non-attainment area. Describe air emissions individually for each site discussed in Question 2b.**

Note: Potential emissions include, but are not limited to, greenhouse gas emissions, particulate matter, and airborne pollutants. Sources of emissions can include stationary sources, such as boilers, process heaters, generators, and/or solvent usage, or mobile sources such as vehicles. It is presumed that every project would result in some emissions being released into the ambient air, so applicants answering “none” must explain why no emissions would be released. Non-attainment areas are designated parts of the country where air pollution levels persistently exceed the national ambient air quality standards. See [42 U.S.C. 7501\(2\)](#).

(b) (4)

**2h. In the box below, please describe: (1) all non-hazardous wastes that would be generated by the proposed project including recycled materials, and (2) the method of their disposal. Describe individually for each site discussed in Question 2b.**

Note: It is presumed that every project would generate solid wastes, so applicants answering “none” must explain why no waste would be generated. Non-hazardous waste is any garbage, refuse or trash, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. See 40 C.F.R. § 261.2.

*Explanation:*

Non-hazardous wastes from the Vidalia Phase 3 facility include:

- 1) Filter bags from the dust collectors and vertical plate filters - landfill
- 2) Waste neutralisation cake - landfill
- 3) Waste neutralisation filtrate - discharge to City of Vidalia
- 4) Crucibles / saggars - landfill
- 5) Product bulk bags - landfill

**3. Is the proposed project near, or does it involve, any of the following resources? Please indicate below any and all resources that could be affected by any project activities. (See Attachment 1 to the Environmental Questionnaire for resource definitions.)**

- |   |  |
|---|--|
| <input type="checkbox"/> a. Historical, archeological, or cultural resources (includes listed and eligible resources over 50 years old or of cultural significance) | <input type="checkbox"/> g. Land resources (e.g., tundra, rainforests)   |
| <input type="checkbox"/> b. Threatened or endangered species (whether proposed or listed by state or Federal governments), including their habitat                  | <input type="checkbox"/> h. Coastal zones  |
| <input type="checkbox"/> c. Marine mammals or essential fish habitat  | <input type="checkbox"/> i. Migratory birds, or Golden or Bald Eagles  |
| <input type="checkbox"/> d. Floodplains or wetlands   | <input type="checkbox"/> j. Areas having a special designation (e.g., Federal and state designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, and marine sanctuaries) |
| <input type="checkbox"/> e. Tribal lands or resources of Tribal interest/sensitivity  | <input type="checkbox"/> k. Prime farmland, unique farmland, or other farmland of statewide or local importance  |
| <input type="checkbox"/> f. Ocean resources (e.g., coral reefs)   | <input type="checkbox"/> l. Special sources of water (e.g., sole source aquifers)  |

If you checked any boxes above, provide a detailed description of: (1) the resources that could be affected, and (2) how project activities may affect those resources.

*Explanation:*

Not relevant.

**4. Does the proposed project involve any of the following activities or areas of concern? Please indicate below any and all activities or areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project. (See Attachment 1 for definitions of each activity or area of concern.)**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> a. Clearing or excavation | <input type="checkbox"/> f. Polychlorinated biphenyls (PCBs) |
| <input type="checkbox"/> b. Dredge and/or fill                | <input type="checkbox"/> g. Navigable air space              |
| <input type="checkbox"/> c. Pre-existing contamination        | <input type="checkbox"/> h. Underground storage tanks        |
| <input type="checkbox"/> d. Pesticide use                     | <input type="checkbox"/> i. Underground extraction/injection |
| <input type="checkbox"/> e. Asbestos or lead-based paint      | <input type="checkbox"/> j. Use of a non-renewable resource  |

If you checked any boxes above, provide a detailed description of: (1) each activity or area of concern, and (2) the effects of each activity or area of concern on your project and/or the surrounding area.

*Explanation:*

Piling is proposed be used to strengthen the ground to support structures. By way of example, Vidalia's Phase 2 expansion project required ~ 500 piles at site with no incident or injury.

**5. Would the proposed project have the potential to result in impacts to the surrounding community? Please indicate below all areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project.**

- ☒ a. Visual impacts
- ☐ b. Populations of low income or minorities (Environmental Justice)
- ☒ c. Changes in local employment
- ☐ d. Changes in local traffic patterns or density
- ☒ e. New transportation access
- ☐ f. New utility lines or right-of-ways
- ☐ g. Other impacts

*If you checked any boxes above, please provide a detailed description of: (1) the communities affected, and (2) what effects the project would have.*

*Explanation:*

The Phase 3 expansion project would result in the following impacts to the surrounding community:

- A) Addition of three (3) - 50,000 square foot buildings
- B) Increase of 120 local jobs
- C) Containerized and bulk break handling facilities at Port of Vidalia

**6. Would the proposed project use, result in, or require the management, storage, transport, or disposal of radioactive, toxic, or hazardous chemicals, waste, or other materials that require special handling?**

Note: Hazardous chemicals and materials include those which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may increase the risk of mortality or pose a substantial threat to human health or the environment when improperly stored, transported, disposed of, or otherwise managed.

Yes ☒ | No ☐



*If you checked “Yes,” please provide a detailed description of: (1) the materials; (2) approximate quantity of each; (3) their role in the project; and (4) storage, transport, and disposal procedures for each material.*

*Explanation:*

The Vidalia Phase 3 facility will require an increase in materials requiring special handling at the site. (b) (4)

**7. Would the proposed project involve the use or development of recombinant DNA or genetically engineered microorganisms, plants, animals, or similar technologies?**

Yes ☐ | No ☒

*If you checked “Yes,” please provide a detailed description of: (1) the genetic modifications, (2) the safety procedures in place for their handling and use over the course of the project, and (3) how they would be disposed of at the project’s conclusion.*

*Explanation:*

**8. Does the project involve the use of any nanoscale materials or nanotechnology?**

Note: Nanotechnology is defined as research and technology development at the atomic, molecular, or macromolecular levels using a length scale of approximately one to one hundred nanometers in any dimension; the creation and use of structures, devices and systems that have novel properties and functions because of their small size; or the ability to control or manipulate matter on an atomic scale.

Yes ☐ | No ☒

*If you checked “Yes,” please describe: (1) the nanoscale materials used, (2) potential risks those materials may pose, and (3) how they would be disposed of.*

*Explanation:*

**9. Is there any public opposition concerning any of the project activities?**

Yes ☐ | No ☒

*If you checked “Yes,” please describe the nature of the opposition and any actions you may have taken or plan to take to address it.*

*Explanation:*

**10. Would the project involve activities or deployments into marine/freshwater aquatic environments?**

Yes ☒ | No ☐

*If you checked "Yes," please provide a detailed description of: (1) the proposed activities or deployment, (2) where and when these activities would occur, and (3) what permit/authorizations have been or would be acquired for this activity.*

*Explanation:*

Phase 3 may involve the installation of new effluent line that would be routed along an existing roadway, over the Mississippi River levee, and into the Mississippi River. This activity will occur if it is determined that continued treatment of wastewater from the Vidalia facility by the Town of Vidalia would put undue pressure on their treatment facilities. The intent is to run the effluent line in the right-of-way of the Port of Vidalia's access road and along their conveyor to their as yet constructed, but permitted dock structure. The Port of Vidalia has already permitted their expansion; therefore, installation within their permitted area reduces potential impacts and permit requirements. This activity would require several permits including: LDEQ - Louisiana Pollutant Discharge Elimination System Permit for operational wastewater/stormwater; USACE Section 408 permit for crossing the Mississippi River levee; and USACE Section 10 and possibly 404 permit. Section 10 (Rivers and Harbors Act) is for impact to the Mississippi River and Section 404 (Clean Water Act) is for any dredge/fill in wetlands. Batture habitat along the Mississippi River is considered jurisdictional wetlands.

**11. Would the proposed project result in a discharge of any type of wastewater, pollutant, or contaminant, including thermal discharges, to a sewer system, stormwater system, soils, retention ponds, or any water resources (e.g., surface water, including lakes, rivers, creeks, and wetlands; and ground water)?**

Note: Under Federal law, the term "pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. See 33 U.S.C. § 1362(6). The term "contaminant" means any physical, chemical, biological, or radiological substance or matter in water. See 42 U.S.C. § 300f(6).

Yes ☒ | No ☐

*If you checked "Yes", please quantify and characterize the wastewater or pollutants and provide a detailed description of the: (1) wastewater, pollutants, or contaminants to be released; and (2) the water resources that may be affected.*

*Explanation:*

Presently, Phase 1 and Phase 2 wastewater discharges comprised primarily of sanitary wastewater and minimal process wastewater with an (b) (4) are treated by the Town of Vidalia prior to discharge through their existing wastewater discharge permit. Stormwater discharges are covered under LDEQ Multi-Sector General Permit, do not have any effluent guideline monitoring, and are discharged to the Vidalia Canal. Phase 2 and 3 will introduce larger quantities of process wastewater associated with neutralization the existing effluent waste stream. (b) (4)

(b) (4) This wastewater is intended to be treated by the Town of Vidalia and discharged via their permit with no pretreatment required. If a new effluent line is installed, Syrah Technologies will obtain an LDPES permit for the discharge of process wastewater to the Mississippi River via the new effluent line.

**12. Would the proposed project have the potential to generate noise impacts to adjacent communities, employees working at the project site, wildlife, and/or sensitive receptors including hospitals, schools, daycare facilities, and elderly housing?**

Yes ☒ | No ☐

*If you checked “Yes”, please provide a description of: (1) the receptors that may be impacted and their estimated distance from the project activities, (2) the level of noise generated (in A-weighted decibels (dba)) to each receptor, and (3) anticipated duration.*

*Explanation:*

While there are no sensitive receptors, communities, or wildlife habitat in proximity to the Vidalia project site, expansion of operations will expose employees to noise. Manufacturing, agriculture, and industrial areas typically have sound levels that exceed 70 decibels for variable durations. As the site experiences noise levels associated with agriculture, an airport, and manufacturing, Syrah Technologies will defer to Occupational Safety and Health Administration (OSHA) guidelines as they relate to employee health and safety. These guidelines require a hearing conservation program be implemented when noise exposure is at or above 85 decibels averaged over 8 working hours, or an 8-hour time-weighted average. Employees will be required to wear personal protective equipment (PPE) commensurate with the noise anticipated from the equipment around which they will be working.

**13. Please provide a detailed description of how the project would be decommissioned, including the disposition of equipment and materials.**

*Explanation:* As the Phase 3 expansion project involves plant expansion (b) (4) for (b) (4) and the facility is expected that have a significant useful life, decommissioning is long-dated. That said, at such time as the facility would be decommissioned, if not sold to and/or re-purposed by another operator, Syrah Technologies would dismantle and recycle as much equipment as practicable, utilizing off-site disposal for all other materials. If the effluent line has been in use, it will be cleaned out and either removed or closed in place.

#### SECTION IV. CERTIFICATION

I hereby certify that I am authorized to submit, and I do so hereby submit, the information in this questionnaire on behalf of the Recipient named below. I certify that the information provided herein is accurate and complete as of the date shown below. I understand that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001. If I receive any information that would indicate that any of the above-referenced answers are no longer correct or complete, I agree to notify EERE immediately. If it is necessary for EERE to modify the information I provide, EERE will request that I recertify the revised form.

Name	Anne Duncan
Title	Vice President US Processing Operations and Authorized Representative
Applicant	Syrah Technologies LLC
Signature	(b) (6)
Date	1 July 2022



## EERE ENVIRONMENTAL QUESTIONNAIRE ATTACHMENT 1

### Definitions for Question 3 –Resources\*

**Historical, Archeological, or Cultural Resources.** The National Historic Preservation Act; the Historic Sites, Buildings and Antiquities Act; the American Indian Religious Freedom Act; and the Archeological Recovery Act provide for the preservation of sites, buildings, structures, or objects of historic, archeological, or architectural significance designated by Indian, Federal, state, or local governments or listed or eligible for listing on the National Register of Historic Places. The Archeological Resources Protection Act, Antiquities Act, and Native American Graves Protection and Repatriation Act also apply if the proposed project is on Federal and tribal land. This item should be checked "yes" if a proposed project is in an area that meets any of the above, or if an archeological survey has not been performed. Provide documentation of any consultation or State Historic Preservation Officer determination letters if available. If this information is not available or a survey has not been conducted recently, DOE may require such a survey to be conducted prior to any proposed project implementation.

**Threatened/Endangered (T/E) Species and/or Critical Habitat.** The Endangered Species Act provides for protection of animals, birds, fish, plants, and other living organisms that are in danger of extinction. A list of T/E species is provided in 50 C.F.R. Part 17. Consultations with the U.S. Department of Interior Fish and Wildlife Service (FWS), National Marine Fisheries Services (NMFS), and the corresponding state agency should be documented. This item should be checked "yes" if any state- or Federally-listed or proposed threatened or endangered species or critical habitat is located in the proposed project area, or could be indirectly affected by the proposed project. If the status of T/E species at the proposed project location is unknown, please contact the local or state office of the FWS or NMFS to obtain a listing of potential species and habitats found in the area.

**Floodplains.** Floodplains are lowlands adjoining inland and coastal waters with a 1 percent or greater chance of inundation in any given year. Indicate "yes" if the proposed project location is in or adjacent to a floodplain area. If documentation is available noting the floodplain boundaries, please provide a copy. Appropriate documentation of the 100 year floodplain [or 500 year floodplain for critical actions\*\*] boundaries include: Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by the Federal Emergency Management Agency (FEMA) of the U.S. Department of Homeland Security. Executive Order 11988 Floodplain Management requires Federal agencies to avoid incompatible development in floodplains, and consider the conformance of the proposed project to floodplain standards, potential effects of the proposed projects on floodplains, and potential effects of floodplain modifications on other local properties and improvements.

\*\* Critical actions as defined in the Implementing Guidelines to Executive Order 11988 are activities for which chance of flooding is too great.

**Wetlands.** Wetlands are areas inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction, [10 C.F.R. 1022.4]. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow, mudflats, and natural ponds. Man-made ponds can qualify as wetlands if invasion of appropriate flora or fauna has occurred. Appropriate documentation of presence or absence of wetlands within the area of project effect includes: FWS National Wetlands Inventory; U.S. Department of Agriculture Soil Conservation Service Local Identification Maps; U.S. Geological Service (USGS) Local Identification Maps; USGS Topographic Maps; state wetland inventories; and regional or local government sponsored wetland and land use inventories. Executive Order 11990 Protection of Wetlands requires Federal agencies to consider the effects of proposed projects on wetlands, and to avoid, to the extent possible, destruction and modification of wetlands. If the status of land in or around the proposed project location is unknown, please contact the state or local U.S. Army Corps of Engineer's office.

**Coastal Zones.** Coastal zones are the coastal waters and adjacent shore lands of the Great Lakes, and the Atlantic, Pacific, and Arctic Oceans, Gulf of Mexico, and Long Island Sound. The term "coastal state" includes the states bordering on those bodies, plus Puerto Rico, the Virgin Islands, Guam, the Commonwealth of Northern Mariana Islands, and the Trust Territories of the Pacific Islands and American Samoa. Coastal states have authority regarding actions, which directly affect coastal zones, in accordance with the Department of Commerce regulations promulgated under the Coastal Zone Management Act. Federal activities and Federal development projects must be consistent with state coastal zone management (CZM) programs to the maximum extent possible. Federal activities are those performed by or on behalf of a Federal agency in the exercise of its statutory responsibilities. Indicate "yes" if the proposed project is located in a coastal zone State or is in the vicinity of a coastal zone State. If a consistency determination has been obtained, or a written "negative determination" (indicating that a consistency determination is not required) please provide a copy. See 15 C.F.R. 930.

**Migratory Birds, Golden or Bald Eagles.** Other Federal and state laws that protect wildlife species include the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Examples of protected migratory birds include Canadian geese and great blue herons. This item should be checked "yes" if the proposed project may directly or indirectly impact any of these species or their habitats. If the status of other protected species is unknown in the proposed project location, please contact the local or state office of the FWS to obtain a listing of potential species and habitats found in the area.

**Areas Having a Special Designation.** Various Federal laws restrict the ability of Federal agencies to aid developments affecting national wilderness areas, national memorial parks, national parks, national monuments, national primitive areas, national preserves, national recreational areas, national wild and scenic rivers, national grasslands, national wildlife refuges, national forests, national lakeshore or seashore, and national trails. Indicate "yes" if any of these areas of special environmental or natural significance is located in close proximity to the proposed project location and describe the specific special designation.

**Prime Farmland, Unique Farmland, or Other Farmland of Statewide or Local Importance.** The Farmland Protection Policy Act requires Federal agencies to consider ways to lessen the effects of proposed projects that convert or adversely affect prime farmland which is not currently classified or designated for future urban development or water storage. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland also includes land that possesses the above characteristics, but is being used currently to produce livestock and timber. Prime farmland does not include lands designated for future urban development, such as land that has been identified for commercial, industrial, or residential development by zoning code, ordinance, or a comprehensive land use plan [7 U.S.C. 4201(c)(1)]. The U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) field office serving the area can provide assistance in determining whether a proposed location or site meets the definition of prime farmland. Form AD 1006, the Farmland Conversion Impact Rating Form, available at NRCS offices, should be used for this purpose.

**Special Sources of Water.** Through the Safe Drinking Water Act, EPA and states designate Critical Aquifer Protection Areas and Sole or Principal Source Aquifers, and State-Designated Wellhead Protection Areas in accordance with 42 U.S.C. 300h-6(b), 42 U.S.C. 300h-3(e), and 42 U.S.C. 300h-7(e), respectively. Such areas are accorded special protection to assure the quality and availability of public water supplies. Indicate "yes" if the proposed project is located in an area designated for protection (e.g., is included in an area wide groundwater quality protection plan), or would constitute a potential source of contamination within an existing or expected wellhead protection area serving a public water supply. If aquifer designations are not known for the proposed project area, contact the environmental protection office for the State.

\* Definitions and requirements are subject to regulatory changes.

## Definitions for Question 4 – Activities or Areas of Concern\*

**Clearing or Excavation.** Clearing or excavation refers to the removal of vegetation, soil, sediments, or disturbance of land surfaces and subsurface including cutting, burning, digging, grading, filling, or blasting. Provide the estimated area to be affected, the quantity of material to be added or removed, and the planned disposition of spoils. Describe the potential for runoff or erosion, any control techniques to be employed, and the distance to nearby surface water bodies, including wetlands.

**Dredge and/or Fill.** Dredge and/or fill are the excavation of material from waters of the United States. Filling is the discharge of material into waters of the United States to change the bottom elevation. Waters of the United States are all interstate waters, and intrastate lakes, rivers, streams, mudflats, wetlands, sloughs, plays, or natural ponds. These activities include "ocean dumping" as regulated under Sections 102 and 103 of the Clean Water Act, construction of dams, dikes, piers, or others that could alter the course of waters of the United States. Also included is any shore activity with the potential for runoff to waters of the United States. If available, include documentation of appropriate consultation(s), e.g., with the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act or Sections 9 and 10 of the Rivers and Harbors Act; and with EPA [40 C.F.R. Parts 220-233].

**Pre-Existing Contamination.** Indicate if the proposed project will disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment. Quantify and characterize such pre-existing substances, including whether they are present above background or regulatory levels. Also quantify the volume of contaminated materials (e.g. soil, sediment, groundwater, debris, etc.) which would require transport to a properly permitted treatment, storage, or disposal facility as the result of the proposed project.

**Pesticide Use.** A pesticide is a substance intended for preventing, destroying, repelling, or mitigating any type of pest including insects, rodent, nematode, fungus, or weed, and any substance intended for use as a plant regulator, defoliant, or desiccant. While the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) imposes no requirements on private applicators, commercial pesticide applicators must be certified by the state or U.S. EPA. Additionally, FIFRA requires that certain pesticides known as "restricted use pesticides" (listed in 40 C.F.R. 152.175) to only be applied by certified applicators. If either commercial or private pesticide application or the utilization of restricted use pesticides is anticipated, indicate "yes". If a private application is anticipated, document measures to be undertaken to assure safe storage, use, and disposal.

**Asbestos.** If the proposed project includes demolition or renovation of an existing building, you must determine if asbestos is present. Common asbestos-containing building materials may include but are not limited to floor tile, mastics, wall board, joint compound, acoustic ceiling tiles, thermal insulation, spray-on fire proofing, glazing, caulking, roof flashing, and felts. Demolition and renovation activities that may impact asbestos containing building materials are regulated by the U.S. Occupational Health and Safety Administration (OSHA) through the Asbestos in Construction Standard and asbestos air emissions from asbestos abatements are regulated by the EPA as a hazardous air pollutant under the Clean Air Act (CAA). Include a description of measures to be undertaken to comply with asbestos removal requirements of 29 C.F.R. 1926.1100 and 40 C.F.R. 61 (Subpart M).

**Polychlorinated Biphenyls (PCBs).** PCBs are a family of man-made organic chemicals that were domestically manufactured from 1929 until banned in 1979 due to their toxicity and persistence in the environment. Given their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were largely used as dielectric and coolant fluids in transformers, capacitors, electric motors, etc. Manufacture, processing, transport, use, marking, storage, and disposal of PCBs are regulated by EPA [40 C.F.R. Part 761] in accordance with the Toxic Substances Control Act. Some states also regulate PCBs as hazardous waste. If the proposed project involves replacement or removal of capacitors, transformers, voltage regulators, circuit breakers, switches, cables, electromagnets, or other electrical equipment, presence or absence of PCBs should be ascertained. A "yes" indication

should be supported with information on the anticipated concentration and quantity of PCB oil, and the intended method/location of disposal.

**Navigable Air Space.** The U.S. Department of Transportation Federal Aviation Administration (FAA) regulates objects which invade navigable air space or otherwise constitute an obstruction to air navigation, and determines whether such activities constitute a navigation hazard. Indicate "yes" if the proposed project involves construction or alteration more than 200 feet above ground level, any construction or alteration in instrument approach areas, and other construction or alteration identified in 14 C.F.R. 77.13. Document notification of the appropriate Manager, Air Traffic Division, of the FAA Regional Office for the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 Notice of Proposed Construction or Alteration may be obtained from the regional FAA office or electronically through FAA's website.

**Underground Storage Tanks.** Indicate "yes" if 10 percent or more of tank volume (including the volume of underground pipes) will be beneath surface of the ground. Indicate if installation, use, or removal of underground storage tanks is anticipated, and whether tank use is/was for storage/collection of hazardous waste, heating oil, other petroleum or petroleum-based substances, stormwater, or wastewater. Describe any leak detection/monitoring methods to be used for storage of hazardous waste or regulated petroleum products like gasoline or diesel.

**Underground Extraction/Injection.** Underground extraction/injection is the subsurface emplacement of fluids through a bored, drilled, or driven well, or through a dug well where the depth of the well is greater than the largest surface dimension. If the proposed project involves construction or use of an injection well, indicate "yes," and describe the class of the well as defined in 40 C.F.R. 146.5, the type and quantity of contaminants (e.g., waste disposal, hydrocarbon or mineral extraction) and whether the injection involves an exempt aquifer as defined in 40 C.F.R. 146.4.

**Use of a Non-Renewable Resource.** Non-renewable resources are naturally occurring substances (e.g., metals, minerals, fossil fuels) that are in limited supply and cannot be replaced or regenerated. The exhaustion or threatened exhaustion of such resources could have significant ramifications. Indicate "yes" if the proposed project would involve a resource that is in limited supply.

\* Definitions and requirements are subject to regulatory changes.