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DOE/EA-2143-SA-1

Supplement Analysis of the Freedom Pines Project Design and Engineering Updates

Introduction

The U.S. Department of Energy (DOE) has prepared this supplement analysis (SA) to evaluate one or more existing environmental assessments (EAs) (listed below) in light of changes that could have bearing on the potential environmental impacts previously analyzed within DOE/EA-2143, *LanzaTech Freedom Pines Fuels LLC* (Final EA). Based on the analysis in the Final EA, DOE determined that the proposed action was not a major action that constituted a significant effect on the human environment within the context of National Environmental Policy Act (NEPA); therefore, the preparation of an Environmental Impact Statement (EIS) was not required. This SA provides sufficient information for DOE to determine whether the existing Final EA remains adequate, whether to prepare a new EA, revise the Finding of No Significant Impact (FONSI), or prepare an EIS, as appropriate.

Existing EAs evaluated in this SA:

- *LanzaTech Freedom Pines Fuels LLC* (DOE/EA-2143), https://www.energy.gov/nepa/doeea-2143-lanzatech-freedom-pines-fuels-llc-commercial-scale-sustainable-aviation-fuel
- (2011 LT EA, 2001 USDA FONSI) Published together with USDA Finding of No Significant Impact, issued September 23, 2011. https://www.rd.usda.gov/sites/default/files/FONSILanza2.pdf
- *Construction and Operation of a Proposed Cellulosic Ethanol Plant, Range Fuels Soperton Plant, LLC (formerly Range Fuels Inc.) Treutlen County, Georgia* (DOE/EA-1647), https://www.energy.gov/nepa/downloads/ea-1647-supplemental-environmental-assessment
- *Construction and Operation of a Proposed Cellulosic Ethanol Plant, Range Fuels, Inc. Treutlen County, Georgia* (DOE/EA-1597), https://www.energy.gov/nepa/ea-1597-construction-and-operation-proposed-cellulosic-ethanol-plant-range-fuels-inc-treutlen

Changes to the Proposed Action or New Circumstances or Information

In 2018, LanzaTech formed Freedom Pines Fuels (FPF) as a wholly-owned LanzaTech subsidiary to build a facility that would demonstrate the Alcohol to Jet (ATJ) technology, partially funded under DE-EE0007966. LanzaTech also submitted a Phase 1 Loan Guarantee application to the U.S. Department of Agriculture (USDA) the same year. In 2020, LanzaTech and other investors formed LanzaJet in order to finance the FPF facility and accelerate commercialization of the ATJ technology. LanzaTech is a LanzaJet shareholder and LanzaTech's

CEO chairs the LanzaJet Board. As part of the LanzaJet formation, FPF was transferred to LanzaJet. However, as the USDA application was initiated by LanzaTech (and FPF is physically located on LanzaTech's site), the 2021 EA and NEPA review were conducted in LanzaTech's name. LanzaJet is now a subcontractor to LanzaTech on DE-EE0007966 and has assumed the primary role in the USDA Phase 2 Loan Guarantee process.

This SA was prepared in order to assess recent design and engineering updates to the Freedom Pines Project (Project) that were developed in 2022 which require a slightly larger project area than what was previously analyzed for construction of the Project within the Final EA dated February 2021. The Project is currently split into two stages of development: the Inside Battery Limit (ISBL) which is the main ATJ technology processing units process and the Outside Battery Limits (OSBL) which includes the auxiliary units and infrastructure to support the operations of ISBL such as tank farm, loading and unloading racks, flare, boiler, wastewater treatment, hydrogen production, and other small apparatuses. The ISBL consists of fabricated modules that are currently being constructed offsite in Toronto, Canada and is approximately 60% complete and due to be mechanically completed and delivered to Soperton, GA by end of January 2023. The OSBL is in the detail engineering phase and is approximately 40% completed. The cost and schedule for the OSBL portion of the Project has increased significantly due to the micro-economic climate with inflation and supply chain pressures, change in scope from the initial engineering estimates and a larger footprint requirement to accommodate the change in scope.

The OSBL detailed engineering started in early November 2021 with the aim to design all the facilities required to support the operation of the ISBL portion of the Project. During the initial stages of the detail engineering, it was determined through process, safeguarding, process safety, facility siting, operability and maintainability studies the size of the facility in terms of required space needed to be increased to accommodate adding new boiler, larger wastewater treatment plant, new Motor Control Center, addition of operator control and lab facilities, additional separation of the flare system to safeguard for the operation of the facility and to provide enough separation between the equipment to reduce risk to as low as reasonably practicable. Furthermore, additional land would be required to accommodate activities during the construction phase such as temporary laydown yard, spoils area, construction trailers and parking lot for the construction.

Background

The Final EA (DOE/EA-2143) was prepared for the Project, an ATJ unit that will produce 10 million gallons of hydrocarbon fuels annually from ethanol at the Freedom Pines Biorefinery site in the City of Soperton, Treutlen County, Georgia. LanzaTech will be utilizing federal funds from the USDA under the Section 9003 Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program and from the DOE through their Funding Opportunity Announcement DE-FOA-0001232, “Project Development for Pilot and Demonstration Scale Manufacturing of Biofuels, Bioproducts, and Biopower (PD2B3)”. The Project will implement patented ATJ technology which converts ethanol from any source into

synthetic paraffinic kerosene (ATJ-SPK) and diesel, meeting ASTM D7566 Annex A5 and ASTM D975, respectively. Products from the biorefinery will be sold to airlines and fuel distributors for blending with conventional jet and diesel fuel. The feedstock for the facility will be fuel-grade ethanol meeting ASTM D4806. The Project will not produce any other products or co-products. DOE funding will be used for a portion of Project costs through completion of a demonstration run that validates the performance of the installed ATJ facility (DOE Demonstration). Specifically, DOE funding will support detailed engineering of process units and site infrastructure upgrades, engineering of interconnects with the Project host site, site preparation, equipment installation and demonstration, and facility management through the DOE Demonstration.

The Freedom Pines Project has utilized federal funds in the past for development of various ATJ processes within the Project area and has completed several rounds of National Environmental Policy Act (NEPA) review through the EA procedure, with the USDA and DOE serving as the lead/cooperating agencies. Previous EAs for LanzaTech, Inc. were completed in 2007, 2009 (supplemental EA), 2011, and 2021, all of which received a Finding of No Significant Impact (FONSI). The most comprehensive of these evaluations was the 2007 EA conducted in connection with a grant from the DOE that provided partial funding for a biorefinery project constructed by Range Fuels, Inc., (Range Fuels) prior to LanzaTech acquiring the site (the Range Fuels Soperton Plant or "RFSP"). The RFSP, when Range Fuels operated the site, fully functioned as an operating biorefinery at the 125 ton per year biomass scale and was designed to produce up 100 million gallons of ethanol per year. Although the Range Fuels Soperton Plant was never built out to full scale, the 2007 EA of the site described and analyzed potential site-specific impacts on the environment that could result from construction and operation of the full-scale Range Fuels Soperton Plant. Therefore, the EA conducted for DOE in 2007 considered a biorefinery significantly larger than what was proposed for the Project and reviewed in DOE/EA-2143.

Resource Areas Not Analyzed in Detail in this SA

The Final EA was conducted in the context of the prior EAs listed above. Section V.2 of the Final EA presents a summary of impacts in comparison to the impacts for projects at the Freedom Pines location for which USDA or DOE previously granted a FONSI. DOE has conducted impact analysis in this SA for all subject areas considered in the Final EA.

Resource Areas Analyzed in Detail in this SA

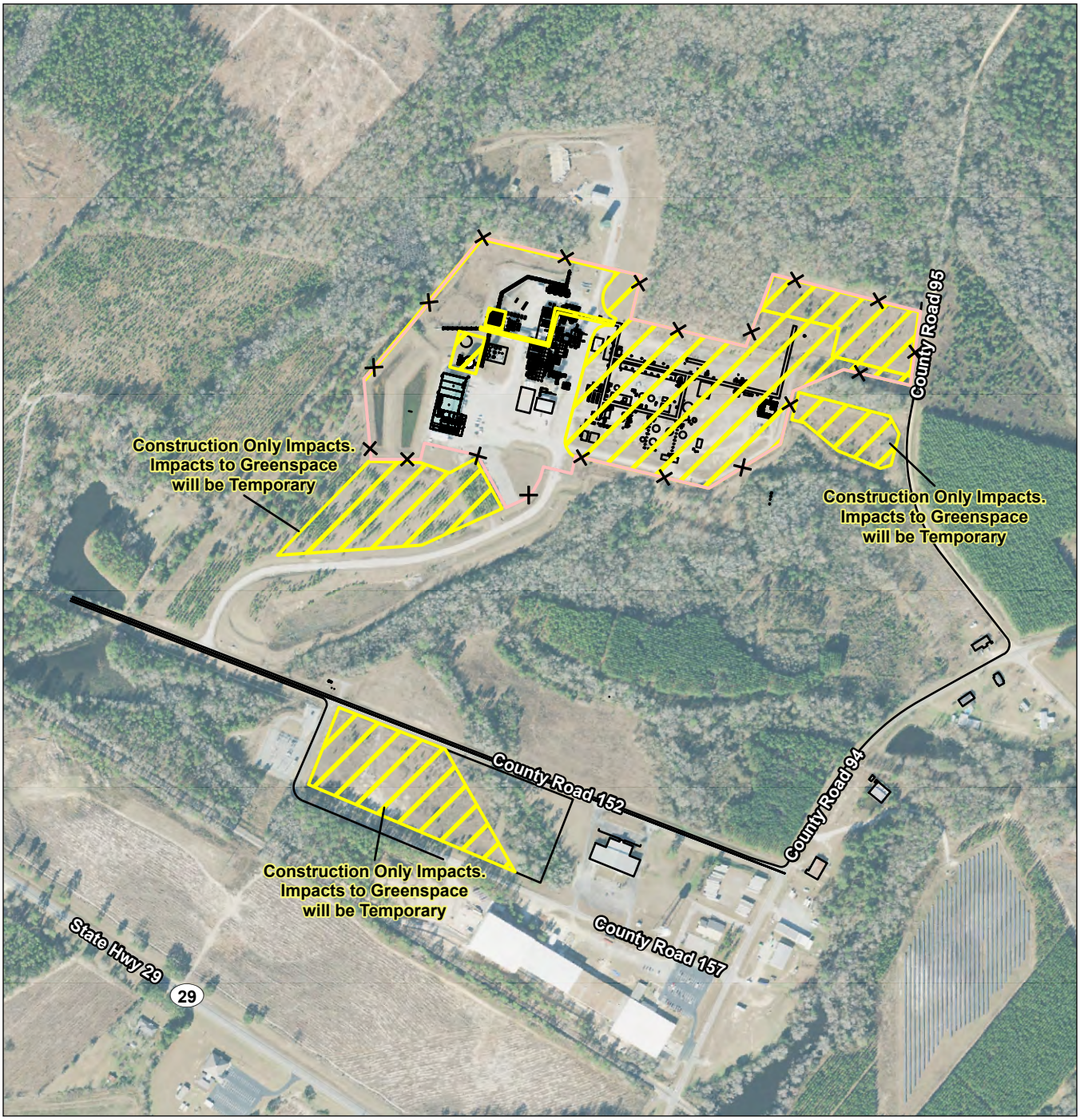
The resource areas in Table 1 are analyzed in detail in this SA.

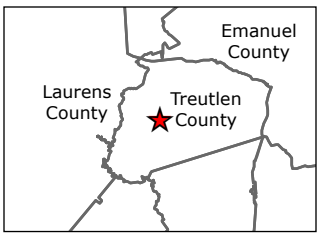
Table 1. Summary of Environmental Impacts				
(A)	(B)	(C)	(D)	(E)
Existing Environment	**Consequences of Range Fuels Construction and Operation**	**Differences in LanzaTech Proposed Construction and Operation**	**Differences in LanzaTech Current Construction and Operation**	**Differences in LanzaJet Proposed Area**
As of 2007	**RF EA, RF SEA**	**2011 LT EA**	**2021 EA**	**2022 Due Diligence Review**
1. Land Use and General Site Description				
The county is rural with forestry and some agricultural uses. Forestry accounts for 80% of the county's land use. The facility is located 2 miles northwest of Soperton in an Industrial Park occupied by 7 other commercial operations. The majority of the site was previously cleared and consists of old field plant communities, streams, and wetlands. Buffer areas around streams and wetland	Create 12.8 acres of impervious surface and 1.3 acres of planned paved road. Would not change intended industrial use of land and would have negligible impact on forest land in Treutlen county.	LanzaTech units are within Range Fuels' planned area of impervious surface.	The Project will lie entirely within the RFSP planned area of impervious surface.	The Project will lie mostly within previously disturbed areas of impervious surface that have been reviewed during the 2007, 2009, 2011, and 2021 EA/FONSI Areas. One small exception is a south of County Road 152, where construction only impacts will occur to greenspace. The area includes grasses, forbs, and young trees, but will minimize impacts for temporary workspace compared to other alternatives.
2. Geomorphology, Geology, Seismic Hazard, and Soils				
The topography at the site ranges from 250 to 320 feet above average mean sea level (AMSL). Four soil series occur within the proposed project area: Gilead, Lakeland, Norfolk, and Plummer. The Gilead and Norfolk Series cover the majority of the proposed project area. The Gilead Series consists of moderately well drained, firm, clayey soils found in the upper coastal plain and has moderately slow permeability. Two soil types from the Norfolk soil series (Norfolk loamy sand with 2 to 5 percent slopes and Norfolk loamy sand with 2 to 5 percent slopes, eroded) that are designated as prime farmland by the NRCS) occur on the proposed project site (Alex Comegys - NRCS personal communication, July 20, 2007).	Minimal impact on geomorphology. Low risk for earthquake. New disturbance to ~48.3 acres of soils. Negligible impact on prime farmland. Based on review of the Treutlen County, Georgia Soil Survey, soils from the Norfolk soil series covered 24.6 acres of the Range Fuel project site.	Reduced area of soil disturbance.	All new equipment, tanks, and interconnections will be installed within the area previously developed for the RFSP.	Since the Project is located primarily within the 2007, 2009, 2011, and 2021 EA/FONSI Areas, there are no changes to impacts to geomorphology, geology, seismic hazards, or soils. Changes are not expected for the small area south of County Road 152 either, which is outside of previously approved areas, but is directly adjacent to those areas.
3. Hydrology				
Surface Water: There are three unnamed streams within the Range Fuels site. The primary stream is approximately 2 feet wide. This stream flows from the northeast to the southwest and is joined by two additional unnamed streams within the property. One of the tributary streams is a perennial stream that originates offsite and the other is an intermittent stream that flows only in response to an offsite water discharge. The primary drainage on the property originates from farm ponds offsite, with additional flows provided by a spring/ seep in the northeastern portion of the property. There are no Federal Emergency Management Agency (FEMA) designated floodplains or floodways on the site (Treutlen County, 2006). **Groundwater:** Several aquifers underlie the lower half of the Oconee River basin in Treutlen County, which includes the Range Fuels site. The only aquifer that receives recharge in Treutlen County is the surficial aquifer, and this recharge area is more than 5 miles away from the site.	No encroachment on surface waters or existing buffers. Potential soil disturbance during construction, with possible modified surface water runoff patterns. Mitigated through use of construction and post-construction BMPs. Planned groundwater withdrawal of 316,800 gpd would have minimal impact on other groundwater users.	Water supplied by City of Soperton; no need for additional groundwater withdrawals.	Water for the Freedom Pines Biorefinery site is provided by the City of Soperton. There will be no need for additional groundwater withdrawals. The site is served by a city-owned well with a capacity of approximately 500,000 gallons per day. The well serves roughly a dozen parties. Freedom Pines is the largest consumer. Total consumption from the well is approximately 30,000 gallons per day or 6% of capacity, prior to the proposed facility. The proposed facility will produce water during ethanol dehydration. Produced water from the process will be recycled in the plant. Depending upon final design decisions and seasonal effects, the facility may be a net producer or consumer of water. The range of water impacts is estimated to be between 30,000 gallons per day of production and 30,000 gallons per day of consumption. In the most conservative case, 30,000 gallons per day of consumption would bring the total consumption from the well to 12% of well capacity, including other current users. Floodplain: The proposed Project is located in a Zone X (area of minimal flood hazard). Coastal Zones: The proposed Project is not located in a coastal zone.	Surface waters will not be impacted by the Project. Stantec completed a desktop assessment for wetlands and waterbodies, and temporary/permanent impacts will be avoided. The Project will use 280,000 gal/day peak load and 155,000 gal/day normal load. This is well within the well capacity that the City can supply., and additionally, produced water from the process will be recycled in the plant as-able.
4. Water Quality				
The 303(d) List of Waters reports on streams and lakes identified as impaired for one or more pollutants and do not meet one or more water quality standards. There are no 303(d) (DNR, 2007) listed segments of impaired waters near the project area. Because there would be no changes in harvest site runoff characteristics following removal of feedstock, there would be no impacts to water quality resulting from the purchase of feedstock materials.	Impact of runoff during construction mitigated by BMPs. Post-construction, impact of additional impervious surfaces expected to have no direct impacts to existing stream and wetland buffers. Post-construction grading and detention pond to contain or treat stormwater. Facility SPCC plan to minimize potential impacts to surficial aquifer due to hazardous material release.	Unchanged. See Table 4-1 for specifics.	Impact of runoff during construction will be mitigated by Best Management Practices. Post-construction impervious surfaces are less than those planned for the RFSP. The volume and contaminants in effluent from the Project will be lower than levels considered in any of the prior EAs.	Impact of runoff during construction will be mitigated by Best Management Practices and implementation of an erosion control plan. Post-construction impervious surfaces are less than those planned for the RFSP. Produced water from the process will be recycled in the plant as-able.

5. Wetlands				
Approximately 18 acres of forested wetlands have been identified on the project site within the Industrial Park. Approximately 90 percent of the wetlands on the site are within a forested area immediately adjacent to perennial and intermittent streams that bisect the property, extending 30 to 100 feet to either side of the stream channel. The remaining 10 percent of onsite wetlands are emergent wetlands located in the eastern portion of the parcel that would remain undeveloped. Additional wetlands are located on the parcel adjacent to the Industrial Park that would contain the chipper. This parcel contains two small forested wetlands. Both wetland areas are located outside of the area proposed for the chipper, storage areas, and truck travel.	Layout of Range plant and supporting infrastructure avoided encroachment on wetlands and associated buffers. No long term negative impacts to wetland hydrology from replacement of the culvert. Encroachment into two wetlands totaling 0.61 acres were self-reported and addressed in Supplemental EA. The encroachments were found to have negligible temporary impacts to hydrology. With purchase of mitigation credits, the encroachments considered to have no net impacts on the wetland.	Unchanged. Facility will remain within planned footprint.	LanzaTech engaged a wetland expert to conduct a thorough site review to identify wetlands on the site. Based on initial finding from the wetland delineation, there will be no impact to wetlands. A report detailing wetland boundaries and type accompanies this EA. The wetland expert concluded that Project work is sufficiently far from any delineated wetlands that consultation from the US Army Corps of Engineers is not required.	The Project is primarily within previously approved areas of impervious surface that have been reviewed during the 2007, 2009, 2011, and 2021 EA/FONSI Areas. The new Project Area was designed to avoid wetland impacts for both temporary and permanent impacts, including the small area south of County Road 152, which is outside of the previously approved areas. Stantec performed a desktop assessment for wetlands and waterbodies and no impacts will be incurred.
6. Biological Resources				
The facility site includes 6 parcels totaling approximately 275.1 acres. Approximately 67.4 of the 275.1 acres would be developed for the project and the remaining acreage would be kept as natural and landscaped greenspace. The main facility site would cover 115.7 acres, much of which has been previously cleared. Within the previously cleared areas, much of the northern and western areas of the site are vegetated with native grasses, dominated by brooms edge, while the southern and eastern portions of the site are predominantly bare dirt. The areas surrounding wetlands and streams on the parcel were not cleared and a 30- to 100-foot wide strip of mature trees remains around the streams and wetlands. These forested areas are dominated by hardwoods (red maple, magnolia, sweet gum and willow oak). It is expected that the site and the surrounding areas would contain a variety of common small animals including field mice, armadillos, opossums, foxes, rabbits, snakes and squirrels, as well as a variety of birds typical of the upper coastal plain of Georgia in forested areas. The northwestern and western perimeter	Possible minor impacts to biological resources and habitat quality. Displacement of animals during construction mitigated by ability to migrate to adjacent habitat via preserved riparian corridors and forest habitat. Activity during operations would have negligible impact on regional populations. Feedstock is normally removed from harvest sites before replanting and therefore does not provide habitat for nearby animals.	Unchanged.	Unchanged. All areas to be used for the proposed project were previously cleared by Range Fuels and approved under prior EAs.	Unchanged for areas that were previously cleared and reviewed for the 2007, 2009, 2011, and 2021 EA/FONSI Areas. Minor amounts of tree clearing are expected in in the eastern staging area (within previously approved areas) that were planted by LanzaTech following 2011 construction. Additionally, pine plantations for logging is one of the largest markets in this area in Georgia, so impacts will be limited. Stantec performed a desktop review of biological resources (vegetation and animal use) within the small area south of County Road 152 which will be used for parking and staging during construction. Based on aerial imagery and site photos from LanzaJet in June 2022, impacts are not anticipated.
7. Protected Species				
CH2M HILL conducted multiple site visits in the spring and summer of 2007 to assess the site for protected species. No federally protected species were identified during these site visits. Habitat and evidence of the presence for gopher tortoise, state listed as threatened, were identified. None of the other protected known to occur in Treutlen County were observed within or adjacent to the project boundaries.	Gopher tortoise burrows were identified. A gopher tortoise relocation program was implemented and exclusion fences constructed. Range agreed to notify USFWS if Indigo Snakes were found. No known instances of federally protected in Treutlen County.	Unchanged.	Unchanged. A desktop review was undertaken to document species in the area currently identified as threatened and endangered. The results are consistent with previous findings documented in environmental reviews. There are two species identified for potential presence on the site, the gopher tortoise and indigo snake. While conducting wetland delineations on the site as described above, a small number of gopher tortoise burrows were noted and located. None of the burrows appeared to be in active use by tortoises or other wildlife, including protected species such as the indigo snake The US Fish and Wildlife agency was contacted and given the opportunity to comment on potential impacts to threatened or endangered species. US FWS responded that they have no additional comments in light of existing strategies to mitigate potential impacts to these species by (a) installing exclusion fences around the construction site; and (b) informing USFWS and DNR if the species were observed in the Project Area.	Stantec completed a desktop assessment of federally listed threatened and endangered species using the USFWS IPaC online tool. The Monarch butterfly, gopher tortoise, and eastern indigo snake are listed as candidate, candidate, and threatened, respectively. Based on a review of previous field work that was implemented into the previous 2007, 2009, 2011, and 2021 EA/FONSI areas and desktop resources (arial imagery and habitat assessment), impacts to these speciesare unlikely. Relocation efforts were implemented in 2008 for the gopher tortoise, which have a symbiotic relationship with the eastern indigo snake (via burrows). Many of the newly proposed areas are outside of previously mapped gopher tortoise/eastern indigo snake mapped burrows, plus the construction of the facility over the years has likely pushed these species to the surrounding habitat around the facility, which is more suitable habitat. Since the Project is taking place in mostly previously disturbed areas, impacts to either of these species is not expected. LanzaJet will complete pre-construction surveys and sweeps to ensure no individuals or burrows are located within the parking/laydown area and will install exclusion fencing during construction to eliminate the possibility of these species entering the Project Area.

8. Safety and Occupational Health				
Firefighting services currently are provided for the Industrial Park by the Soperton Fire Department, located in downtown Soperton approximately three miles from the proposed plant. Police services at the proposed plant would be provided by the Treutlen County Sheriff's Office in Soperton. Medical services, including emergency rooms, are available at the Fairview Park Hospital in Dublin, Meadows Regional Medical Center in Vidalia, and Emanuel Medical Center, in Swainsboro, approximately 26, 21, and 25 miles, respectively, from the proposed plant.	Hazards result from high temperature and pressure operations, and from toxic and flammable materials. Hazards addressed in site safety plan.	Hazards from high temperature and pressure operations reduced. Significant reduction in hazard from 2,3-BDO product compared to methanol. Ethanol product unchanged. See Tables 8-1, 8-2 for details. See Attachment 2 regarding microbe safety.	Safety services are unchanged from the RFSP. No new hazards are introduced by the Project. Plant capacity is less than the RFSP. Storage of hazardous and flammables less than ethanol storage for the RFSP.	Safety systems, potable water, process water supply, wastewater treatment capabilities, cooling tower, utility integration, and other infrastructure systems are already in place and operational at TTB. LanzaTech will utilize the existing infrastructure, upgrading as necessary to implement its technology, including fire suppression.
9. Noise				
Noise, in the context of this analysis, refers to sounds generated by activities that could affect employees of the facility, employees of nearby commercial operations, residents near the proposed facility, or wildlife. Noise levels within the Treutlen County Industrial Park are variable, depending on truck and train traffic in the area. While no specific data have been compiled for the Treutlen County Industrial Park, background noise levels in these areas would be expected to range from 40 dBa, to 75 dBa, with occasional upward spikes related to rail and road traffic.	Construction noise limited to daylight hours. Staff to use hearing protection and follow OSHA standards. Operational noise primarily due to chipping. No adverse impacts to outdoor or indoor activities in local residences. Noise disturbance for truck deliveries at one residence during daylight hours only.	Significantly reduced noise levels: (1) no chipper planned; (2) estimated 10 trucks/day at current capacity versus > 500 considered in Range EA. Surrounding forest acreage will be maintained as a noise buffer	Significantly reduced noise levels than the RFSP, as also noted in 2011 LT EA: (1) no chipper or wood-handling equipment; (2) estimated 10 total trucks per day for feedstock and product, or <4% of the traffic considered in the 2007 RFSP EA.	Unchanged.
10. Meteorology				
Treutlen County is characterized by a warm and humid, temperate climate. Average annual temperature ranges from lows of about 53°F to highs of approximately 78°F. Average annual precipitation is approximately 46 inches. Treutlen County has a low incidence of tornadoes, which is 3.1 times lower than the national average. Only one damaging tornado has occurred since 1950. Georgia has not experienced a major hurricane (Category 2 or greater) since before 1900.	No impact on climate or weather. Minor potential risk for severe weather to adversely impact operations.	Unchanged	Unchanged. Facility designed for safe operation at the extremes of local weather, including freezes. HS&E procedures will include tornado and hurricane preparations.	Unchanged.
11. Air Quality				
Treutlen County is in attainment for all criteria air pollutants, including the new 8-hour ozone standard (USEPA, 2007b). Because the proposed facility would not be built in a criteria air pollutant non-attainment or maintenance area or emit any criteria pollutant in excess of the major source threshold of 100 tpy, a full CAA conformity determination is not required.	Temporary and minor construction-related air quality impacts due to dust during construction. Criteria pollutants below threshold for Prevention of Significant Deterioration regulations. Facility to be constructed and operate under "Air Permit to Construct and Operate" issued by EPD. Ambient concentrations of all toxic air pollutants below acceptable ambient concentrations (AAC).	Unchanged. See Table 11-1 for details.	Unchanged. Will fall within the current air quality impacts.	The Project expects to receive a "Minor Source" permit and has submitted a permit application with Georgia EPD accordingly. The Project is also located in attainment for all criteria air pollutants. Additional emission estimates from VOCs and HAPS are higher compared to previous EAs, but are still under Title V thresholds.
12. Waste Management and Hazardous Materials				
Treutlen County has no landfill sites within the county. Solid wastes are collected and transported to the Toombs County Landfill. The Toombs County landfill is located approximately 18 miles southeast of the site along SR 29, and has capacity to accept solid wastes for an additional 20 years, and is permitted to accept both solids/ sludges and construction/ demolition debris. No hazardous waste sites or hazardous materials have been identified on the site of the Proposed Action.	No known hazardous waste sites. No impacts from hazardous materials during construction. Spill prevention and containment measure and flare placement designed to reduce impacts from fuel production, storage, transport. No hazardous wastes generated and solid wastes can be accommodated in existing Toombs County Landfill.	No hazardous wastes generated. Biocatalyst replaces solid inorganic catalyst and is disposed of through anaerobic digestion. Residual solids from digester are returned to gasifier feed or disposed of with char, leaving no net solid output from the unit.	No hazardous waste generated for the Treutlen County landfill. Inorganic catalysts are returned to manufacturer for reclamation.	Unchanged.
13. Cultural Resources				
In July of 2007, Brockington and Associates, Inc. conducted a field survey of the site in compliance with Section 106 of the National Historic Preservation Act, and 36 CFR Part 800. Research found only one previously recorded archaeological site (9TU20) within a 1.6-km (1-mile] radius of the project tract. Site 9TU20 consists of a small scatter of lithics and ceramics. The site was recorded by Garrow and Associates, Inc., in 2000 and was found to not be eligible for nomination to the NRHP. No previously recorded historic structures or other architectural resources were identified within 1.6 km (1 mile) of the field survey. During the structures survey, no intact structures older than 50 years were identified within the project area.	No NHRPO eligible cultural resources were found.	Unchanged.	LanzaTech and its consultant conducted an additional literature review of the site. That review identified 4 archeological sites that were recommended as not eligible for the National Historic Places. The map resulting from that review was provided to the State Historic Preservation Office. LanzaTech will submit the SHPO's Environmental Review Form after receiving hard copy photographs from the site. The SHPO submittal will be included with applicable Tribal consultations.	Unchanged. The previously reviewed 2007, 2009, 2011, and 2021 EA/FONSI Areas were cleared by the SHPO as not eligible for the National Register of Historical Places. As for the small area south of County Road 152 that is outside of the EA/FONSI Areas, this area was reviewed as part of the 2021 EA and was cleared. Therefore, no impacts to cultural or archeological resources will be incurred.

14. Transportation				
The Georgia Central Railways local line runs along the southwestern boundary of the Treutlen County Industrial Park. This line transports goods and materials to a mainline junction in Dublin. There is no train service on weekends and the rail line does not support passenger service. Approximately 3 miles north of the Soperton Industrial Park, there is an exchange from SR 15 onto the main interstate route serving the area, 1-16. The most direct route from 1-16 to the proposed site is via SR 15 to Commerce Drive. However, SR 29 provides an alternate route to the site from 1-16 and some traffic originating west of Soperton travels via SR 29. SR 15 is a North-South rural arterial between Soperton and 1-16. The roadway consists of two twelve foot travel lanes, two foot paved shoulders, one foot grass shoulders and ditches. The traffic capacity of this section of SR 15 for its given level of service is 1,600 vehicles per hour in each direction. For this section of SR 15, the peak hour use over the past ten years would be 204 vehicles in each direction, which is 12.75 percent of the capacity of SR 15 for its given level of service. SR 29 is a North-South rural arterial between Soperton and 1-16. The roadway consists of two 12-foot travel lanes, 2-foot paved shoulders, 1-foot grass shoulders, and ditches. The intersection used to access State Route 29 is a "Y" intersection with the acute angle near 45 degrees (45°) and a large turning radius on the northern corner. The traffic capacity of SR 29 for its given level of service is 1,600 vehicles per hour in each direction. For this section of SR 29, the peak hour use over the past 10 years would be 389 vehicles in each direction, which is 24.31 percent of the capacity of SR 29 for its given level of service.	Will not exceed capacity. No additional facilities required.	Will not exceed capacity. No additional facilities required.	The planned transportation requirement is <4% of that planned for the RFSP and one sixth of the traffic when the RFSP was operating at reduced capacity (125 ton per day of biomass feedstock).	Unchanged.
15. Utility Infrastructure				
Natural Gas: Natural Gas pipelines, supplied by Atlanta Gas Light, currently run immediately adjacent to Commerce Drive along a portion of the southern border of the parcel for the proposed plant. Additional four inch lines would be installed by Atlanta Gas Light along Commerce Drive and onto the facility. **Potable Water:** Range Fuels signed a Memorandum of Understanding with the Soperton Municipal Water Supply to receive up to 0.72 mgd of municipal water. Four-inch water lines are in place in the Industrial Park to provide potable and process water and fire protection for planned industrial development. **Wastewater:** The City of Soperton WWTP receives flow from the sewer system installed in the Industrial Park. The City has indicated that its WWTP has between 0.1 and 0.2 mgd of available capacity to process wastewater from the project. **Power:** Regionally, the existing power infrastructure was adequate to support the requirements of the proposed plant. No power lines were on the site and a 115 kV to 25 kV substation had to be built on-site to accommodate the Range Fuels project. New 115 kV transmission lines were constructed to connect the substation to the electrical power grid.	Atlanta Gas Light installed new gas lines. Georgia Power completed construction of new 115 kV transmission lines and a new substation.	No new power, water or natural gas requirements (see "Inputs & Outputs" table).	There are no new power water or natural gas requirements. Requirements for wastewater disposal were analyzed in the context of existing permits and City/County infrastructure. Based on discussions with local authorities, existing City WWTP infrastructure will be adequate for the Project's operating requirements. Existing site civil infrastructure will continue to be sufficient for stormwater management requirements in the construction and operations phase. The power infrastructure installed by Georgia Power and Range Fuels is adequate to support the Project, with the addition of a motor control center and panel board local to the plant to deliver power and meter consumption.	The detail engineering work determined that some of the assumptions around the capabilities of the current infrastructure are not valid. The current WWTP will not be sufficient to handle the discharge requirements, the natural gas supply to the site to operate the flare and the boiler is not adequate and will require a larger supply line and the fire water system which also serves the LT site will need to be supplemented by additional holding and pumping capacity. The electrical supply to the site will need to increased due to the demand of the FPF site and the addition of an electrolyzer. The water supply from the city will need to be increased but it is within the capabilities of the city well.
16. Aesthetics				
The proposed location of the Range Fuels facility is predominately within an existing Industrial Park containing seven current businesses. Most of the buildings in the Industrial Park have metal exteriors, with the exception of the Easter Seals and County Training facilities, which have brick facades. None of the existing buildings in the Industrial Park exceed 35 feet in height. There is a water tower located in the Industrial Park that is approximately 120 feet tall.	Plant and support facilities are minimally visible to all but neighboring businesses and not readily visible to closest residences. Plant structures < 100 feet, reducing visibility. Georgia Power infrastructure had negligible impacts on aesthetics. Facility and security lighting is unavoidable long-term adverse impact to night sky views in immediate vicinity.	Unchanged. Maximum height of new units is 25 meters, which is below Range Fuels' planned maximum of 100 feet.	The maximum height of equipment in the new facility is 144 feet. There are two radio towers within Treutlen County. The WJHH-AM tower (217 feet) is located at the Treutlen County School District property, 2.9 miles from the site. The WKTM-FM tower (302 feet) is located 4 miles to the northeast of the site, off of I-16. No new structures have been built in the immediate vicinity of the site since the time of previous EAs and the visibility of the site from local businesses and residences remains unchanged.	Unchanged.
17. Socioeconomic Factors				
See page 16 of the accompanying excerpt from the DOE EA.	The project's job creation and economic impact, both during construction and plant operation, are expected to have a positive influence on all key socioeconomic factors. Minority residents are not expected to be negatively impacted by construction or operation of the project.	Unchanged.	Unchanged from prior EAs.	Unchanged.
Misc. Alternatives				
				From a land use perspective, the alternative option (adjacent to utility substation south of the Project Area) for a parking area and laydown yard would involve more tree clearing (permanent land conversion), impacts or possible disruptions to utilities, and additional safety hazards with overhead transmission lines, etc.





Legend

- Fenceline
- Site Layout Design
- 2022 Development Area

0 325 650 Feet

(At original document size of 8.5x11)
1:7,800

N

Stantec

Notes

1. Coordinate System: NAD 1983 StatePlane Georgia East FIPS 1001 Feet
2. Data Sources: LanzaJet, NADS
3. Background: 2021 NAIP

Project Location
Treutlen Co., GA

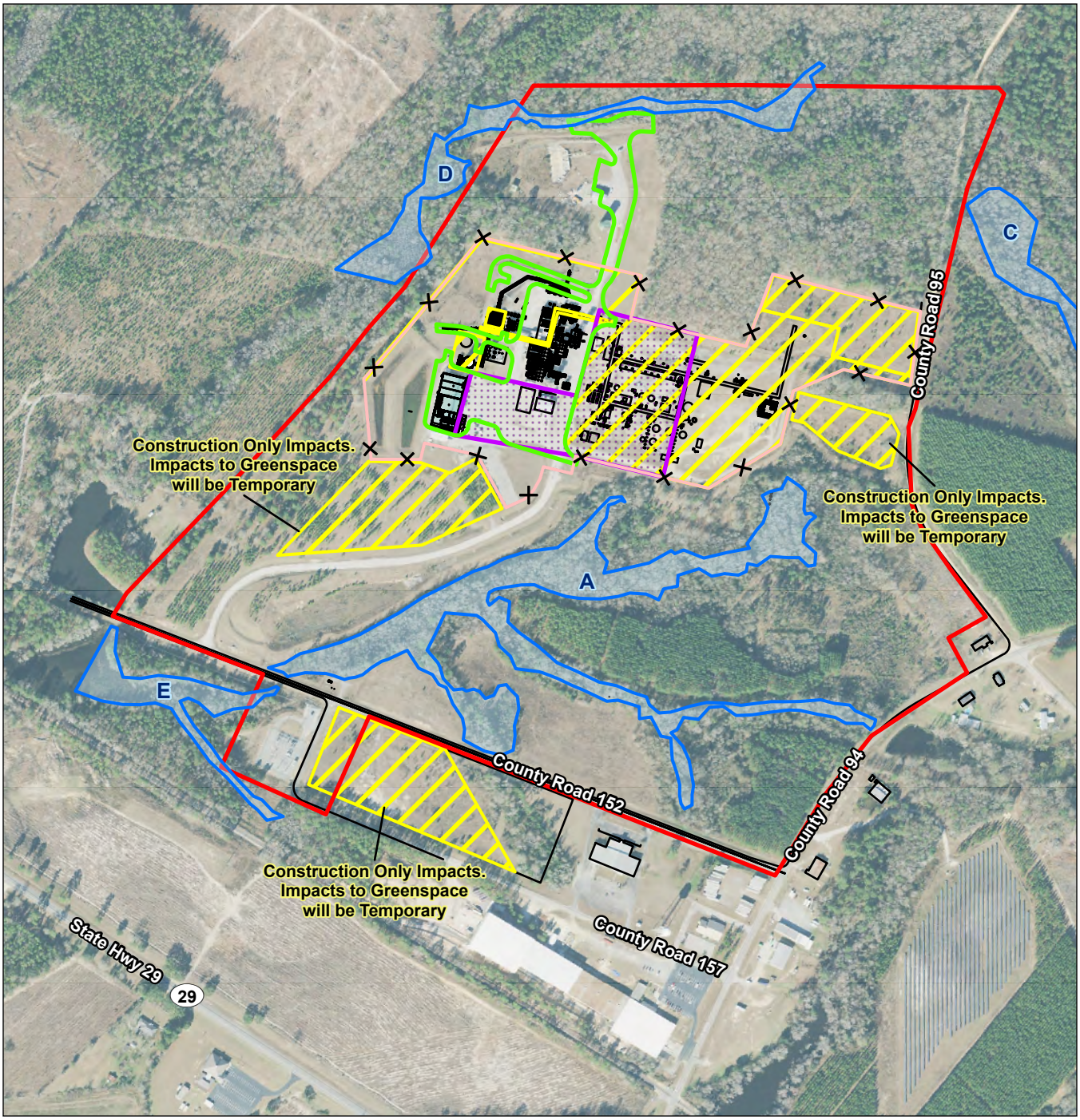
Prepared by KJM on 2022-06-30

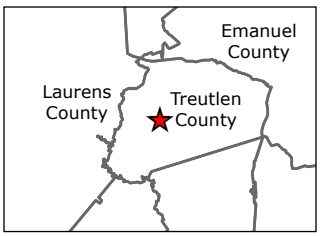
Client/Project
LanzaJet
Environmental Assessment

227705199

Figure No.
1

Title
2022 LanzaJet Development Area





Notes
1. Coordinate System: NAD 1983 StatePlane Georgia East FIPS 1001 Feet
2. Data Sources: LanzaJet, NADS
3. Background: 2021 NAIP

Legend
- Fenceline
- Site Layout Design
- 2018 Wetland Delineations
- 2022 Development Area

EA & FONSI Approved Area
- 2007
- 2011
- 2021

0 325 650 Feet
(At original document size of 8.5x11)
1:7,800

N

Stantec

Project Location
Treutlen Co., GA

Prepared by KJM on 2022-06-30

Client/Project
LanzaJet
Environmental Assessment

227705199

Figure No.
2

Title
Combined 2007 to 2021 EA and FONSI Approved Areas and 2022 LanzaJet Development Area

V:\227\active\227705199\03_data\gis_cad\gis\pro\EA\EA.aprx Revised: 2022-06-30 By: kjmueller

Mitigation

Based on this analysis, mitigation measures will continue to be implemented as described in the Final EA. Section V.3 of the Final EA discusses mitigation measures that will be taken for any potential environmental impacts as part of each resource area analyzed. Because the new circumstances are similar in nature to the existing potential environmental impacts analyzed in the Final EA, no new mitigation measures were identified.

Determination

In accordance with DOE's NEPA implementing regulations, and consistent with the *NEPA Recommendations for the Supplement Analysis Process,* 2nd Edition, DOE prepared this SA to evaluate whether the existing Final EA remains adequate or whether the recent design and engineering updates to the Project area requires DOE to prepare a new EA, revise the existing FONSI, or prepare an EIS. DOE concludes that the environmental analysis that relates to the potential impacts to resource areas stemming from the proposed action in DOE/EA-2143, *LanzaTech Freedom Pines Fuels LLC*, properly takes the environmental impacts resulting from the increased facility footprint and associated temporary construction disturbance into consideration, given the *de minimis* nature of the impacts as delineated in this SA. DOE concludes that the changes to the Project described in this SA do not require a new EA, revised FONSI, or preparation of an EIS. No further NEPA documentation is required.

For questions about this SA or the Final EA, please contact:

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Issued in Golden, Colorado, this 29th day of July 2022.

Casey Strickland

Digitally signed by Casey Strickland
Date: 2022.07.29 07:47:09 -06'00'

Casey Strickland
NEPA Compliance Officer