



FINAL ENVIRONMENTAL ASSESSMENT

FULCRUM SIERRA BIOFUELS LLC,
WASTE TO FUEL FACILITIES IN McCARRAN,
STOREY COUNTY NEVADA



JOINTLY EXECUTED FOR:
DEPARTMENT OF DEFENSE TITLE III PROGRAM,
WRIGHT-PATTERSON AFB OH 45433
AND
USDA - RURAL DEVELOPMENT
WASHINGTON, DC 20250
DATED
AUGUST 2014

Fulcrum Sierra BioFuels, LLC

(as of August 20, 2014)

**FINDINGS OF NO SIGNIFICANT IMPACT FOR
AN INTEGRATED BIOFUEL PRODUCTION FACILITY
IN STOREY COUNTY, NEVADA**

August 2014

Pursuant to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) §1500-1508, Air Force's Environmental Impact Analysis Process (EIAP) regulations codified in 32 CFR §989, and Department of Defense Directive (DoD) 6050.1, the Air Force has prepared this Environmental Assessment (EA) for determining and assessing potential natural and human environment impacts associated with developing commercial-scale Integrated Biofuel Production Enterprise (IBPE) capability in Storey County, Nevada. This EA is incorporated by reference into this finding.

Background, Purpose and Need

The Defense Production Act (DPA) (50 United States Code App. §2061 *et seq.*) Title III Program is managed by the Office of the Secretary of Defense and executed by the Department of Defense (DoD) Executive Agent Program Office, a component of the Manufacturing and Industrial Technologies Division of the Materials and Manufacturing Directorate, Air Force Research Laboratory (AFRL/RXM). As the Executive Agent for the DoD's DPA Title III Program, the Air Force is responsible for executing programs that ensure domestic production capability for technology items that are essential to national defense.

In accordance with DPA Section 303(a)(5), on January 8, 2013 a Presidential Determination (PD) was signed establishing the Advanced Drop-in Biofuels Production Project (ADBPP). The PD asserted that the DoD's reliance on "...crude oil derived fuels undermine foreign policy objectives and impact the Nation's trade imbalance" and that "...advanced biomass-derived transportation fuels that use a domestic, renewable feedstock provide a secure alternative that reduces the risks associated with dependence on petroleum sources."

The Air Force DPA Title III Program is therefore interested in establishing the commercial-scale manufacture and supply of drop-in replacement biofuels for aviation and marine diesel applications. The DoD has indicated that it intends to purchase drop-in replacement biofuels that meet approved specifications, meet the provisions of the Energy Independence and Security Act Section 526, are a "drop in fuel" that can utilize existing infrastructure, are delivered to DoD fully blended with conventional petroleum product counterparts JP-5, JP-8, or F-76, and are ready for use.

The U.S. Department of Agriculture-Rural Business-Cooperative Service (RBS) is participating as a co-operating agency in the preparation of this EA. Fulcrum Sierra BioFuels, LLC (Sierra BioFuels) is seeking a loan guarantee from the RBS pursuant to Section 9003 of the Food, Conservation, and Energy Act of 2008 for Project Sierra through the USDA Loan Guarantee Program. The RBS Loan would support approximately 36 percent of the expected total project cost.

The purpose of the Proposed Action is the design, construction and/or retrofit, validation, qualification and operation of a domestic commercial-scale IBPE that meets a requirement of at least 10 million gallons per year neat biofuel production capacity. The IBPE would be capable of producing drop-in liquid transportation fuels targeted for military operational use, and as such, must be approved and certified MILSPEC JP-5, JP-8, and/or F-76 equivalents by the time the IBPE becomes operational.

Description of Proposed Action

Under the Proposed Action, Sierra BioFuels, formerly awarded to Fulcrum Brighton BioFuels, LLC under Phase 1 of the ADBPP and a subsidiary of Fulcrum BioEnergy, Inc. (Fulcrum), intends to construct, own and operate a municipal solid waste (MSW) feedstock IBPE, comprised of a Biorefinery and a Feedstock Processing Facility. Located on approximately 19.4 acres in the Tahoe-Reno Industrial Center, approximately 20 miles east of Reno, Nevada, the Biorefinery would use steam reforming gasification, Fischer-Tropsch (FT) and fuel upgrading technologies (“gas-to-liquids” or “GTL”) to produce a permitted maximum of 12.3 million gallons per year annually of renewable neat synthesized paraffinic kerosene (SPK) fuel from approximately 200,000 tons of MSW feedstock.

The Feedstock Processing Facility, located on approximately 14.4 acres in the industrial area near the community of Lockwood, Storey County, approximately 8 miles east of Reno, Nevada, adjacent to the Lockwood Regional Landfill and approximately 15 miles west of the Biorefinery, would utilize an innovative sorting process to convert MSW into a feedstock for use at the Biorefinery.

Feedstock would be composed of the organic component of MSW derived from the residual materials remaining after recycling operations. Feedstock includes paper and paperboard, yard trimmings, food scraps, wood, plastics, containers and packaging (such as milk cartons and plastic wrap), and durable (such as furniture) and non-durable goods (such as paper and clothing). The Feedstock Processing Facility includes a unique MSW processing system engineered to incorporate a unique combination of shredding steps that remove the smaller fractions of the MSW stream. The shredded material would be separated by density using an air classification system. The air classification process provides the separation needed to create feedstock that would be relatively free of moisture and includes mixed paper, textiles, wood and some mixed plastics. The heavy fraction materials include glass, inert materials, fines and very wet items. This unique combination of targeted shredding combined with bulk density separation would be the fundamental driver behind Sierra BioFuels’ ability to create a consistent feedstock suitable for the production of SPK fuel. The processed feedstock would be baled for storage and/or transport to the Biorefinery.

The Biorefinery is being designed to convert nearly 200,000 tons of feedstock per year into a permitted maximum of 12.3 million gallons of neat SPK fuel. The Biorefinery would be composed of several distinct process units including a single gasification train to convert the feedstock to an intermediate product, syngas. Once conditioned and further processed, the syngas would pass through a FT reactor to catalytically convert the syngas into intermediate liquid products. A hydroprocessing/fractionation upgrading unit would further process the FT liquids into the SPK fuel. Within the gasification process, excess carbon dioxide and other inert gases (such as hydrogen sulfide) would be removed to maintain the proper syngas composition. An off-gas stream of purge gas would be combusted in a utility boiler for the production of process steam for use in the Biorefinery.

The Proposed Action would site the IBPE on property that is mostly disturbed land, zoned as “I-2 Heavy Industrial” pursuant to the Storey County Zoning Ordinance and has been designed to avoid or minimize environmental impacts to the extent feasible. These design features, such as standard operating procedures and best management practices, can be found in the EA.

Findings of No Significant Impacts (FONSI)

Based upon my review of the facts and analyses contained in the attached EA, I find the Proposed Action consisting of designing, constructing, installing, operating, and future disposition of a commercial Integrated Biofuel Production Enterprise would not have a significant impact on the natural and human environment; therefore, an environmental impact statement is not required. This analysis fulfills the NEPA requirements, the President's CEQ 40 CFR §1500-1508 and the Air Force EIAP regulations 32 CFR §989.

Command Civil Engineer
Communications, Installations and
Mission Support

ENVIRONMENTAL ASSESSMENT

FOR
DEFENSE PRODUCTION ACT TITLE III
ADVANCED DROP-IN BIOFUELS PRODUCTION PROJECT
FULCRUM SIERRA BIOFUELS, LLC FOR A INTEGRATED BIOFUELS
PRODUCTION ENTERPRISE IN STOREY COUNTY, NEVADA

U.S. AF/AFMC
AFRL Wright Research Site
2310 Eight Street, Building 167
Wright-Patterson AFB, OH 45433-7801

August 2014

Executive Summary

This Executive Summary is intended to provide a brief overview of the Proposed Action, alternatives, and conclusions from the impact analyses. For the supporting documentation and detailed analyses, please see the full environmental assessment.

Project Overview and Alternatives Description

Under the Proposed Action, Fulcrum Sierra BioFuels, LLC (Sierra BioFuels), formerly awarded to Fulcrum Brighton BioFuels, LLC under Phase 1 of the Advanced Drop-in Biofuels Production Project (ADBPP) and a subsidiary of Fulcrum BioEnergy, Inc. (Fulcrum), intends to construct, own and operate a commercial scale Integrated Biofuel Production Enterprise (IBPE), comprised of a Biorefinery and a Feedstock Processing Facility, for the production of neat synthetic paraffinic kerosene (SPK) fuel from municipal solid waste (MSW) feedstock from which recyclables and non-biomass components have been removed (feedstock). The Biorefinery is being designed to use state-of-the-art, non-combustion, thermochemical conversion technology to convert the MSW feedstock into Fischer-Tropsch (FT) liquid biofuel. The FT liquids would be further hydroprocessed to neat SPK fuel. The Biorefinery would be located on approximately 19.4 acres of privately owned land within the Tahoe-Reno Industrial Center (TRI Center), near the community of McCarran, Storey County, Nevada. The Feedstock Processing Facility would be located approximately 15 roadway miles to the southwest of the Biorefinery on approximately 14.4 acres, in the industrial area near the community of Lockwood (Lockwood Landfill Industrial Area), adjacent to the Lockwood Regional Landfill in Storey County, Nevada.

Under the No Action Alternative, the government would not be providing federal funding to investigate or develop the proposed biofuel production capability on these sites. The government may make future and continuing overall project risk and viability determinations based partially on, or completely independent of, the environmental impacts or merits documented herein. It is always possible that non-federally funded development would result in similar development and environmental impacts to these sites as documented.

Affected Environment and Environmental Effects

The Biorefinery would be located within an existing industrial park located on 19.4 acres and the Feedstock Processing Facility would be located on 14.4 acres near an existing landfill. The Proposed Action project area is defined as this 33.8 acre area and its associated minor infrastructure connections. There are no state-, county-, or city-owned lands in the vicinity of the project area. There are no residences, churches, schools, cultural centers, parks, or playgrounds within 1.5 miles of either site. The Proposed Action would have no impact to prime farmland. No naturally occurring surface water features have been observed. The sites do not contain unique or significant vegetation, wildlife species, or fisheries resources. No special management areas are within the vicinity of either facility.

Impacts of emissions would not cause or contribute to an exceedence of an ambient air quality standard. The Proposed Action would not have significant adverse effects to surface water. The potential to contaminate groundwater would be negligible, and there would be no direct discharge to groundwater. Storm water and groundwater discharge permits are required. The removal of a total of 33.8 acres of sagebrush vegetation and wildlife habitat in partially disturbed areas would be planned for industrial development. Protective measures that limit habitat removal during migratory periods would be implemented. No known historic properties or cultural resources have been located at either site. If undiscovered historic properties or cultural resources are found, work would cease pending consultation with Tribes and State Historic Preservation Officer. Anticipated land use and land ownership would remain unchanged.

Introduction of visual elements would be similar to other industrial developments at the TRI Center and the Lockwood Landfill Industrial Area. There would be no potential for adverse impact to geology and soils at the sites. Introduction of noise would be similar to other industrial developments at the TRI Center and Lockwood Landfill Industrial Area. The IBPE would use existing roads, infrastructure, and utilities designed to accommodate heavy industrial facilities. Therefore, impacts to transportation routes and to the surrounding project area from construction of the IBPE are anticipated to be minimal. The IBPE would add additional employment during construction and operation (up to 74 full-time jobs), and socioeconomic benefits to the surrounding areas would likely occur. Since there are no communities in proximity to either site, there are no environmental justice population concerns present.

Noise and odors are not expected to affect surrounding landowners, as the area is zoned for heavy industrial. Additionally, Storey County Zoning Ordinances require that noise be limited at the property boundary to levels of 84 decibels. The baled feedstock would be wrapped in polyethylene film for outdoor storage, which would limit potential odors from the feedstock. Feedstock debaling would take place in an enclosure to minimize odors. To minimize effects to public health and safety, emergency response plans would be developed for the Biorefinery and the Feedstock Processing Facility. The Biorefinery's fire suppression system would provide for fire protection with a minimum fire water flow from hydrants of 3,000 gallons per minute (gpm) for 3 hours. All activities would be carried out in compliance with OSHA requirements. Furthermore, both facilities would have protective fencing around the perimeter, employ security lighting, and control access to the facilities in order to minimize the threat from intentional destructive acts.

Cumulative Analysis and Best Management Practices

Development of the IBPE would remove the remaining sagebrush vegetation, understory grasses, and associated potential wildlife habitat on two parcels totaling approximately 33.8-acres in areas that are already disturbed from other construction-related activities and from grading that has already occurred on portion of both of the sites. This development would remove a small fraction of the overall cumulative vegetation and potential wildlife habitat that would result from similar developments within the TRI Center and Lockwood Landfill Industrial Area. The area currently meets ambient air quality standards. All stationary sources that have the potential to emit air pollution are required to comply with Nevada Department of Environmental Protection air permitting requirements to prevent construction and operations emissions from exceeding applicable thresholds. Therefore it is not expected that there would be significant cumulative impacts associated with the construction and operation of the IBPE. Additionally, given the unpopulated and remote nature of the TRI Center and the Lockwood Landfill Industrial Area, no significant visual cumulative effects are expected as no sensitive receptors would be affected by the change in the visual character of the area.

Best Management Practices (BMPs) would be developed to reduce project related impacts. Although site-specific BMPs would be developed once the site layout, engineering specifications, and operating procedures are finalized, BMPs have been proposed for air quality and surface water resources.

List of Acronyms

°F	degrees Fahrenheit
µg/m ³	micrograms per cubic meter
ADBPP	Advanced Drop-In Biofuel Production Project
AGFD	Arizona Game and Fish Department
AIRFA	American Indian Religious Freedom Act
ARC	Architectural Review Committee
ARPA	Archaeological Resources Protection Act
ASU	Air Separation Unit
BCC	Birds of Conservation Concern
BFW	boiler feed water
BLM	Bureau of Land Management
BMP	Best Management Practice
BMS	Burner Management System
BNSF	Burlington Northern Santa Fe
BWM	Bureau of Waste Management
BWPC	Bureau of Water Pollution Control
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO ₂	carbon dioxide
COS	carbonyl sulfide
CTC	Carbon Trim Cell
DoD	Department of Defense
DPA	Defense Production Act
EA	environmental assessment
EIAP	Environmental Impact Analysis Process
EISA	Energy Independence and Security Act
EO	Executive Order
FT	Fischer-Tropsch
ft ³	cubic feet
GHG	Greenhouse gas
H ₂	hydrogen
H ₂ S	hydrogen sulfide
HAP	hazardous air pollutant
HC	Hydrocracker
HFTL	heavy FT liquid
HMIS	Hazardous Materials Inventory Statement
hp	horsepower
HRS	heat recovery system

HRSG	heat recovery steam generator
HRU	Hydrogen Recovery Unit
I-80	Interstate 80
IBPE	Integrated Biofuel Production Enterprise
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolts
LFTL	light FT liquid
LP	low pressure
MBTA	Migratory Bird Treaty Act
MFTL	medium FT liquid
MOU	Memorandum of Understanding
MP	medium pressure
mph	miles per hour
MRF	Material Recovery Facility
MSW	municipal solid waste
MW	megawatts
N ₂	nitrogen
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Division of Wildlife
NEPA	National Environmental Policy Act
NGS	National Geographic Society
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
NO ₂	nitrogen dioxide
NOI	Notice of Intent
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NVE	NV Energy, Inc.
NV-SP	Nevada state protected
NV-SPS	Nevada state protected sensitive
OSHA	Occupational Safety and Health Administration
PC Heater	Pulse Combustion Heaters
PD	Presidential Determination
PM ₁₀	particulate matter less than 10 microns in diameter
POx	Partial Oxidation
psig	pounds per square inch, gauge
RO	Reverse Osmosis
ROW	right-of-way
SCFD	Storey County Fire Department
SCR	selective catalytic reduction

SCSO	Storey County Sheriff Office
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SOP	Site Operating Plan
SPK	synthetic paraffinic kerosene
SRU	Sulfur Removal Unit
SUP	Special Use Permit
SWPPP	Storm Water Pollution Prevention Plan
SWReGAP	Southwest Regional Gap Analysis Project
tpy	tons per year
TRI Center	Tahoe-Reno Industrial Center
TRIGID	TRI General Improvement District
UP	Union Pacific
USC	United States Code
USDOE	U.S. Department of Energy
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
ZLD	Zero Liquid Discharge

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1.0 Introduction

1.1 Purpose, Need, and Background

The purpose of the Advanced Drop-In Biofuel Production Project (ADBPP) Environmental Assessment (EA) is to assess the environmental impact of a proposed federal action to support the design, construction and/or retrofit, validation, qualification, and operation of a domestic commercial-scale Integrated Biofuel Production Enterprise (IBPE) capability at one or more locations.

The Defense Production Act (DPA) (50 United States Code [USC] App. §2601 *et al*) Title III Program is managed by the Office of the Secretary of Defense and executed by the Department of Defense (DoD) Executive Agent Program Office, a component of the Manufacturing and Industrial Technologies Division of the Materials and Manufacturing Directorate, Air Force Research Laboratory (AFRL/RXM). As the Executive Agent for DoD's DPA Title III Program, the Air Force is responsible for executing programs that ensure domestic production capability for technology items that are essential to national defense.

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1.2 Decision to be Made

This EA evaluates the potential environmental consequences of the federal government assisting in the establishment of a commercially viable biofuel production capability at a specific location. The National Environmental Policy Act (NEPA), through its implementing regulations, requires federal agencies to

document, analyze, and review proposed actions and potential alternatives. These actions, their impacts to resources and corresponding risks are assessed and analyzed using established Air Force guidance.

1.3 Scope of the Environmental Assessment

The NEPA requires federal agencies to consider environmental consequences in their decision-making process. The President's Council on Environmental Quality (CEQ) has issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental impact analysis. The Air Force *Environmental Impact Analysis Process* (EIAP) is accomplished through adherence to the procedures set forth in CEQ regulations (40 Code of Federal Regulations [CFR] §1500-1508), DoD Instruction 4715.9 *Environmental Planning and Analysis*, and 32 CFR §989 (Environmental Impact Analysis Process), July 15, 1999, as amended. These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by the President on February 11, 1994. In the EO, the President instructed each federal agency to make "achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." 'Adverse' is defined by the Federal Interagency Working Group on Environmental Justice as "having a deleterious effect on human health or the environment that is significant, unacceptable, or above generally accepted norms." This EA would determine if the proposed or alternative actions would result in adverse effects to low-income or minority populations.

Through Intergovernmental and Interagency Coordination for Environmental Planning, requests have been made for information on planned actions in the surrounding community. If any concurrent actions are identified during the EA process, they would be examined only in the context of potential cumulative impacts. A cumulative impact, as defined by the CEQ (40 CFR §1508.7), is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

1.3.1 Resource Areas Addressed in Detail

All resource areas that could be affected by the Proposed Action or No Action Alternative shall be reviewed and documented. **Table 1-1** details all applicable areas requiring a comprehensive analysis of potential impacts. The intent of this EA is to meet the NEPA requirements established in 32 CFR §989. This EA addresses affected environment and impact analysis for earth, biological, cultural, and human resources.

Table 1-1 Resource Areas Addressed in Detail

Resources Area	Document Location
Air Quality and Meteorology	Section 3.11
Water Resources	Section 3.5
Biological Resources	Sections 3.8, 3.9, 3.10
Cultural Resources	Section 3.12
Land Use Requirements/Restrictions	Section 3.2

Table 1-1 Resource Areas Addressed in Detail

Resources Area	Document Location
Traffic and Transportation	Section 3.4
Geological Resources and Soils	Section 3.7
Noise and Odors	Section 3.15
Waste Management	Section 3.6
Infrastructure and Utilities	Section 3.3
Socioeconomic Impacts and Environmental Justice	Section 3.13
Aesthetics	Section 3.14
Public Health and Safety	Section 3.16
Area/Regional Cumulative Impacts	Section 4.2
Irreversible and Irrecoverable Changes	Section 4.3

1.3.2 Resource Topics Eliminated from Detailed Analysis

All resource areas would be affected by the Proposed Action or Alternative Actions; therefore, no resource areas have been eliminated from further study in this document.

1.4 Public Participation, Coordination, and Regulatory Permitting Requirements

This EA is part of the EIAP for the Proposed Action and was prepared in compliance with NEPA regulations. The following paragraphs describe the laws and regulations that apply or may apply to the proposed and alternative actions.

1.4.1 Interagency and Intergovernmental Coordination

Federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action or Alternative Actions have been notified and consulted. This coordination fulfills the Interagency Coordination Act and EO 12372 *Intergovernmental Review of Federal Programs* (July 14, 1982), which requires federal agencies to cooperate with and consider state and local views in implementing a federal proposal. EO 12372 is implemented by the Air Force in accordance with Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning (IICEP)*. A complete listing of the agencies consulted is found in Chapter 6.0.

1.4.2 Permits, Approvals, and Authorizations

A status of permits, approvals, and authorizations associated with the Feedstock Processing Facility and the Biorefinery are provided in **Table 1-2** and **Table 1-3**, respectfully.

Table 1-2 Permits, Approvals, and Authorizations for Feedstock Processing Facility

Agency	Permit	Details	Status
Discretionary Permits and Authorizations – Prior to Construction			
Federal: No Federal Permits Required.			
United States Department of Defense (DoD)	Finding of No Significant Impact (FONSI) and Certification of EA	Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the NEPA, 40 CFR §1500-1508, Air Force's EIAP regulations codified in 32 CFR §989, and Department of Defense Directive 6050.1.	Initial Draft EA completed December 31, 2013.
State: Nevada			
Nevada Division of Environmental Protection (NDEP) – Bureau of Air Pollution Control (BAPC)	Class II Air Quality Operating Permit (Air Permit)	Typically required for facilities that emit less than 100 tons per year (tpy) of any 1 regulated pollutant, less than 10 tpy of any hazardous air pollutant (HAP) and less than 25 tpy total HAP. Nevada's air quality control regulations provide for permitting construction and operation in a single permit.	Application for the Air Permit to be submitted no less than five months prior to start of construction.
NDEP - Bureau of Air Pollution Control (BAPC)	Surface Area Disturbance (SAD) Permit	Required if 5 acres or more of surface area will be disturbed, a SAD permit is required to address the control of particulate matter (PM).	Application for a SAD Permit to be submitted with Air Permit.
NDEP – Bureau of Waste Management (BWM)	Solid Waste Material Recovery Facility (MRF) Permit	An application for a Solid Waste MRF Permit must include: 1) design report; 2) operational plan; 3) closure plan; and 4) financial assurance. A MRF must not be constructed until the application has been approved by the NDEP-BWM.	Application for the Solid Waste MRF Permit to be submitted no less than three months prior to start of construction.
Local			
Storey County – Planning Department	Special Use Permit	The site is zoned “I-2 Heavy Industrial” under the Storey County zoning regulations. The Feedstock Processing Facility would be an “Allowed Use” in the industrial zone as it functions similar to a “Solid Waste Recycle Center” as defined under the Storey County zoning regulations.	<i>Allowed Use:</i> No Permit Required.

Table 1-2 Permits, Approvals, and Authorizations for Feedstock Processing Facility

Agency	Permit	Details	Status
Administrative Permits and Authorizations – Prior to or in Conjunction with Construction Activities			
State			
NDEP – Bureau of Water Pollution Control (BWPC)	NDEP General Industrial Stormwater Permit (NVR 050000)	An owner/operator must be included under the NPDES Storm Water Discharge general permit by giving NDEP-BWPC Notice of Intent (NOI) to commence construction and developing a Storm Water Pollution Prevention Plan (SWPPP) for construction activities.	NOI to be given no later than 24 hours prior to commencing construction and storm water control measures implemented in accordance with SWPPP.
Local			
Storey County Building Department	Grading Permit	A grading permit would be required for all facets of the grading plan to ensure sufficient local area drainage, surface mines and landscaping for the purpose of mitigating the adverse effects of erosion.	Application must be submitted prior to beginning grading activities.
Storey County Building Department	Building Permits	Prior to obtaining a building permit, design packages must be submitted to the Storey County Building Department for review. Once all proposed work, existing site conditions and adjoining public facilities have met the requirements of applicable Storey County building codes, an approval will be granted and the permits issued.	Design packages must be submitted for approval prior to commencing construction.
Storey County Fire Department (SCFD)	Fire and Life Safety Plan	All businesses applying for building permits in Storey County must be reviewed and inspected to ensure compliance with applicable Fire and Life Safety Standards.	Must be completed prior to commencing construction.
SCFD	Hazardous Materials Inventory Statement	Any facility storing, handling and/or using any amount of hazardous materials would be required to submit a Hazardous Materials Inventory Statement (“HMIS”). The approved HMIS serves as a Fire Department Permit.	To be submitted 30 days prior to the storage of hazardous materials.
SCFD	Fire Alarm System Detection Permit	Submitted with Fire and Life Safety Plan.	To be obtained prior to commencing construction.

Table 1-2 Permits, Approvals, and Authorizations for Feedstock Processing Facility

Agency	Permit	Details	Status
SCFD	Fire Suppression System Permit	Submitted with Fire and Life Safety Plan.	To be obtained prior to commencing construction.
Canyon General Improvement District (CGID)	Water “will serve” Letter	A facility is required to submit a written “request for potable water service” and interconnection to CGID. Upon review, CGID issues a “will serve” letter. The Biorefinery will have no discharge of process waste water to the sewer.	<i>Issued:</i> January 29, 2014 (Appendix A) . <i>See Andreini (2014)</i>

Table 1-3 Permit, Approvals and Authorizations for the Biorefinery

Agency	Permit	Details	Status
Discretionary Permits and Authorizations – Prior to Construction			
Federal			
DoD	FONSI and Certification EA	Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the NEPA, 40 CFR §1500-1508, Air Force’s Environmental Impact Analysis Process regulations codified in 32 CFR §989, and DoD Directive 6050.1.	Initial Draft EA completed December 31, 2013.
State: Nevada			
NDEP-BAPC	Class II Air Permit	Typically for facilities that emit less than 100 tpy for any 1 regulated pollutant and emit less than 25 tpy total HAP and emit less than 10 tpy of any 1 HAP. Nevada’s air quality control regulations provide for permitting construction and operation in a single permit. If a facility’s process and/or equipment does not match those specified in the permit, a modification would be required. A permit revision requires submittal of a permit modification application and a processing fee. A permit revision (and the issuance of a new or revised permit) would be required before construction of a modification may occur.	Final Issued: July 1, 2013. Facility Identification No. A0921. Permit No. AP 2869-3306. A revised permit was issued on June 25, 2014.
NDEP – BAPC	SAD Permit	Required if 5 acres or more of surface area will be disturbed, a SAD permit would be required to address the control of PM.	Application for a SAD Permit to be submitted with Air Permit.
Local			
Storey County Planning Commission	Special Use Permit (SUP)	SUPs are approved upon a determination that a parcel of land is suitable in terms of location, topography, adjoining land use, physical and environmental characteristics, and size and shape for the facility that is proposed.	Issued: March 5, 2009. SUP No. 2009-034. Extended: March 5, 2010. Extended: February 15, 2011. Vested: January 12, 2012

Table 1-3 Permit, Approvals and Authorizations for the Biorefinery

Agency	Permit	Details	Status
Administrative Permits and Authorizations – Prior to or in Conjunction with Construction Activities			
State			
NDEP –BWPC	NDEP Storm Water Discharge Permit – Industrial Activity General Permit (NVR 050000)	An owner/operator must be included under the NPDES Storm Water Discharge general permit by giving NDEP-BWPC NOI to commence construction and developing a SWPPP for construction activities.	NOI to be given no later than 24 hours prior to commencing construction and storm water control measures implemented in accordance with SWPPP.
Division of Industrial Relations, Mechanical Unit	Pressure Vessel Permit	A contractor must receive a permit prior to installing a boiler or pressure vessel.	To be obtained prior to commencing construction.
Storey County Building Department	Grading Permit	A grading permit is required for all facets of the grading plan to ensure sufficient local area drainage, surface mines and landscaping for the purpose of mitigating the adverse effects of erosion.	Application must be submitted prior to beginning grading activities.

Table 1-3 Permit, Approvals and Authorizations for the Biorefinery

Agency	Permit	Details	Status
Local			
Storey County Building Department	Grading Permit	A grading permit is required for all facets of the grading plan to ensure sufficient local area drainage, surface mines and landscaping for the purpose of mitigating the adverse effects of erosion.	Application must be submitted prior to beginning grading activities.
Storey County Building Department	Building Permits	Prior to obtaining a building permit, design packages are submitted to the Storey County Building Department for reviews. Once all proposed work, existing site conditions and adjoining public facilities have met the requirements of applicable Storey County building codes, an approval will be granted and the permits issued.	Design packages must be submitted for approval prior to commencing construction.
SCFD	Fire and Life Safety Plan	All businesses applying for building permits in Storey County must be reviewed and inspected to ensure compliance with applicable Fire and Life Safety Standards,	Must be completed prior to commencing construction.
SCFD	Hazardous Materials Inventory Statement	Any facility storing, handling and/or using any amount of hazardous materials would be required to submit a HMIS. The approved HMIS serves as a Fire Department Permit.	To be submitted 30 days prior to the storage of hazardous materials.
SCFD	Fire Alarm System Detection Permit	Submitted with Fire and Life Safety Plan.	To be obtained prior to commencing construction.

Table 1-3 Permit, Approvals and Authorizations for the Biorefinery

Agency	Permit	Details	Status
SCFD	Fire Suppression System Permit	Submitted with Fire and Life Safety Plan.	To be obtained prior to commencing construction.
TRI Center – Architectural Review Committee (ARC)	ARC Design Approval	ARC reviews and approves all development proposals for conformance with the TRI Center’s Declaration of Covenants, Conditions and Restrictions and Development Handbook (TRI Owners Association 2000).	ARC application to be submitted concurrently with Building Permit application.
TRI General Improvement District (TRIGID)	Water “will serve” Letter	Each facility would be required to submit a written request for service to TRIGID. Upon review, TRIGID would issue a “will serve” letter.	Issued: June 7, 2010 (Appendix A).
TRIGID	Sewer “will serve” Letter	Each facility is required to submit a written request for service to TRIGID. Upon review, TRIGID would issue a “will serve” letter.	Issued: June 7, 2010 (Appendix A).

1.4.3 Other Regulatory Requirements

The EA considers all applicable laws and regulations, including but not limited to the following:

- *Clean Air Act*, as amended (42 USC §7401 *et seq.*)
- *Oil Pollution Prevention Act* (40 CFR Part 112)
- *Community Environmental Response, Compliance and Liability Act* (42 USC 9601 *et seq.*)
- *Occupational Health and Safety Act* (29 USC 651 *et seq.*)
- *Emergency Planning and Community Right to Know Act* (42 USC 11000 *et seq.*)
- *Spill Prevention Control and Countermeasure Plan (SPCC)*, per 40 CFR 112 Subpart A (for compliance with the Occupational Safety and Health Administration (OSHA) and the Emergency Planning and Community Right-To-Know Act (EPCRA))
- EO 11990, *Protection of Wetlands* (May 24, 1977)
- *Clean Water Act* (33 USC §1251 *et seq.*), including Section 404 (33 USC §1344)
- Section 10 of the *Rivers and Harbors Act of 1899* (33 USC §403)
- EO 11988, *Floodplain Management* (24 May 1977)
- *Endangered Species Act* (16 USC §1531-1542)
- *Pollution Prevention Act* (42 USC §§13101-13102 *et seq.*)
- *Archaeological Resources Protection Act* (ARPA) (16 USC §470aa-mm)
- *National Historic Preservation Act* (NHPA) (16 USC §470 *et seq.*)
- *American Indian Religious Freedom Act* (AIRFA) (42 USC §1996)
- *Protection of Historic Properties* (36 CFR Part 800)
- *Native American Graves Protection and Repatriation Act of 1991* (25 USC §3001 *et seq.*)
- *Resource Conservation and Recovery Act* (42 USC §6901 *et seq.*)
- *Toxic Substance Control Act* (15 USC §2601 *et seq.*)
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994)

1.5 Document Organization

This EA is organized into 7 chapters.

- Chapter 1* Contains the purpose of and need for action, the overview and background of the government's requirement, identification of the decision to be made, a summary of the scope of the environmental review, identification of applicable regulatory requirements, and a summary of the document organization.
- Chapter 2* Describes the history of the formulation of alternatives, identifies alternatives eliminated from further consideration, provides a detailed description of the Proposed Action, describes the alternatives and the No Action Alternative, provides a comparison matrix of environmental effects for all alternatives, and describes measures to minimize or reduce impacts.

- Chapter 3* Documents the current sites' natural, cultural, and historical resource. This chapter documents the comparison between the current resource baseline and the proposed future state through a detailed resource impact review, evaluation, analysis and assessment. In addition, this chapter addresses cumulative, irreversible and irretrievable resource development impacts. (40 CFR §1502.15 & §1502.16)
- Chapter 4* Lists cumulative environmental impacts.
- Chapter 5* Lists comprehensive environmental protection measures.
- Chapter 6* Lists persons and agencies consulted in the EA scoping and preparation process.
- Chapter 7* Lists references and source documents relevant to EA preparation.

2.0 Proposed Action and Alternatives

2.1 Introduction

Two alternatives are considered for analysis: the Proposed Action (Section 2.2) and the No Action Alternative (Section 2.3). This chapter describes both alternatives, as well as alternatives considered but eliminated from analysis (Section 2.4).

2.2 Proposed Action

The Proposed Action has been developed pursuant to the requirements of the DPA Title III Program. Under the Proposed Action, Sierra BioFuels intends to construct, own and operate a Biorefinery and a Feedstock Processing Facility for the production of a renewable biofuel in Storey County, Nevada. The Biorefinery would be designed to use steam reforming gasification, FT and fuels upgrading technologies ("gas-to-liquids" or "GTL") to produce a permitted maximum of 12.3 million gallons annually of neat SPK fuel from approximately 200,000 tons of feedstock.

Feedstock would be MSW sourced from the local geographic waste-shed of the IBPE. The sorted, post-recycled MSW feedstock would be converted into neat SPK fuel using a four-step process comprised of feedstock preparation, steam reforming gasification, FT liquids synthesis and hydroprocessing/fractionation upgrading. In the first step, feedstock preparation, MSW would be delivered to the Feedstock Processing Facility and be prepared, sorted, and baled into feedstock. In the second step, steam reforming gasification, the feedstock would be converted into a synthesis gas (syngas) that is composed primarily of hydrogen (H₂) and carbon monoxide (CO). The third step converts the syngas into FT liquids using a fixed bed conventional FT reactor system based on a cobalt catalyst. The fourth and final step, hydroprocessing/fractionation upgrading, converts the FT liquids into to SPK fuel in conformance with the specifications in ASTM D7566, Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons.

Feedstock would be composed of the organic component of MSW derived from the residual materials remaining after recycling operations. The feedstock includes paper and paperboard, yard trimmings, food scraps, textiles, wood, plastics, containers and packaging, and durable goods (such as furniture). The Feedstock Processing Facility is located in the industrial area near the community of Lockwood in Storey County, Nevada. The site is adjacent to the Lockwood Regional Landfill approximately 8 miles east of Reno Nevada, and 15 roadway miles (distance over established roadways between the sites) west of the Biorefinery. The Feedstock Processing Facility would utilize state of the art MSW processing systems to shred, sort, prepare, and bale a consistent feedstock meeting the specifications required by the Biorefinery for the production of SPK fuel. The processing system includes an air classification system which segregates the lighter fraction of the MSW from the heavier fraction (e.g., glass, metal, dirt, and very wet items) by density to create a consistent feedstock material. The processed feedstock would be baled with polyethylene film suitable for outdoor storage at the Feedstock Processing Facility and/or the Biorefinery.

The Biorefinery, would be located in the TRI Center near the community of McCarran, Storey County, Nevada approximately 20 miles east of Reno. The Biorefinery will use steam reforming gasification, FT and fuels upgrading technologies to convert prepared MSW feedstock into a permitted maximum of 12.3 million gallons annually of neat SPK fuel. The Biorefinery would be designed with a single steam reforming gasification unit for the conversion of feedstock into syngas and a heat recovery system generation (HRSG) unit. Once conditioned and further processed, the syngas would pass through a FT reactor to catalytically convert the syngas into intermediate liquid products. A hydroprocessing/fractionation upgrading unit would further process the FT liquids into the SPK fuel. Within the syngas generation process, excess carbon dioxide (CO₂) and other inert gases (such as hydrogen sulfide [H₂S])

would be removed to maintain the proper syngas composition. An off-gas stream of purge gas would be combusted in a utility boiler for the production of process steam for use in the Biorefinery.

2.2.1 Biorefinery

2.2.1.1 Facility Description

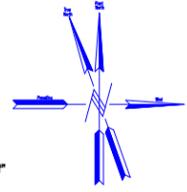
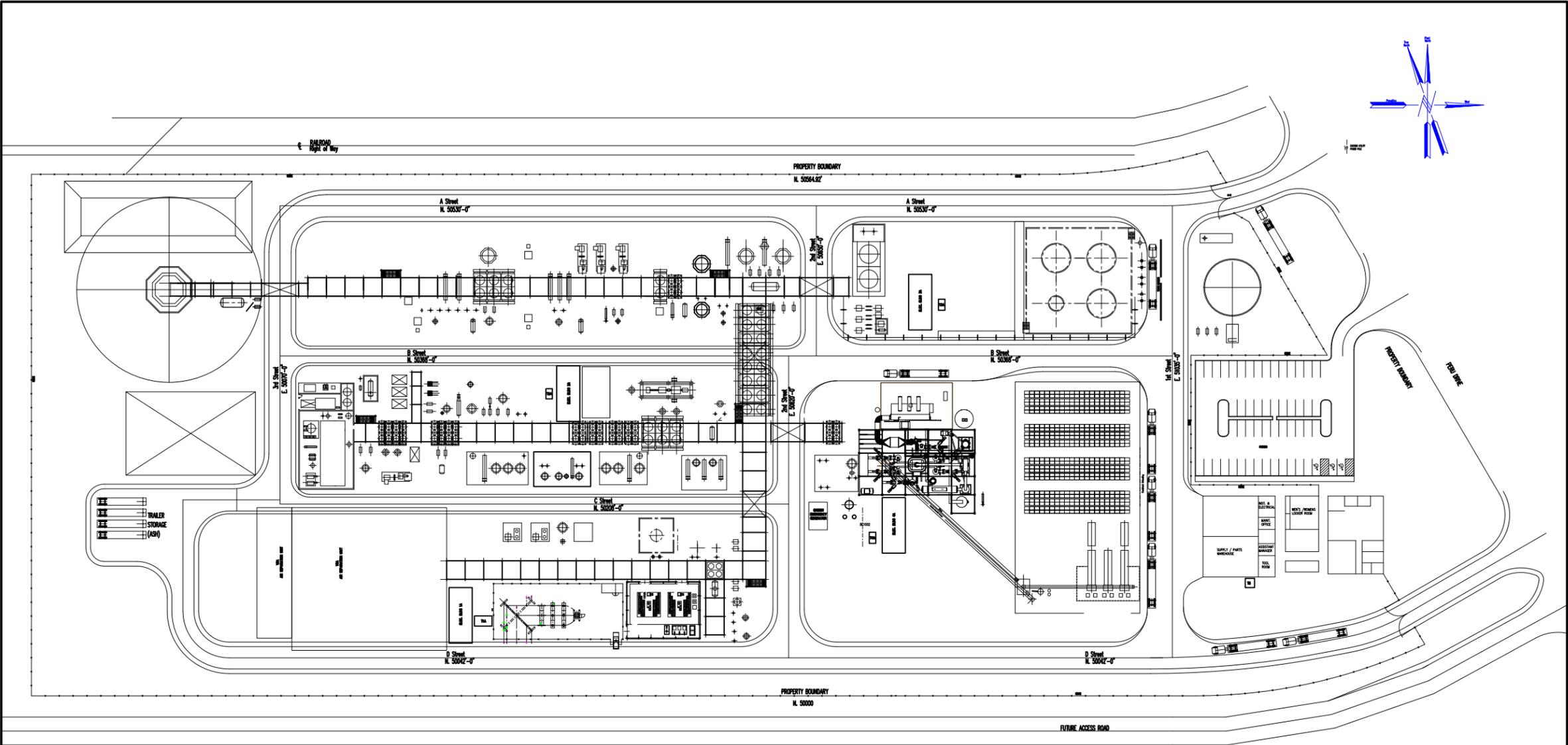
The site for the Biorefinery would be located entirely on approximately 19.4 acres of privately owned land within the TRI Center, near the community of McCarran, Storey County, Nevada. A plot plan is depicted in **Figure 2-1**. There are no existing facilities or utilities on the site, but the site has been partially disturbed by clearing, grading, and the use of fill material prior to Sierra BioFuels' purchase of the property. The property is bordered by undeveloped land to the west and south, a railroad line borders the property on the north, and Peru Drive, a major TRI Center improved road, to the east. The existing rail and road systems would provide both rail and truck/car access to the site. The Biorefinery and supporting infrastructure would occupy the entire 19.4 acre parcel, which would be fenced along the perimeter.

The Biorefinery's designed process uses steam reforming gasification, FT and GTL technologies to convert feedstock into SPK fuel. The Biorefinery would be designed to convert nearly 200,000 tons of feedstock per year into a permitted maximum of 12.3 million gallons of neat SPK fuel.

The feedstock would be converted into SPK fuel using a four-step process comprised of feedstock preparation, steam reforming gasification, FT liquids synthesis and hydroprocessing/fractionation upgrading. In the first step, feedstock preparation, MSW would be delivered to the Feedstock Processing Facility and be prepared, sorted, and baled into feedstock. The second step, steam reforming gasification, the feedstock would be converted into a syngas. In the third step, FT liquids synthesis, the syngas would be catalytically converted into FT liquid hydrocarbons using conventional fixed bed catalyst FT reactors. In the fourth and final step, hydroprocessing/fractionation upgrading, the FT liquids would then be upgraded to SPK fuel in conformance with the specifications in ASTM D7566, Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons. A portion of the purge gas would be used as fuel gas in a utility boiler to produce steam to be used in the Biorefinery, indirectly offsetting a portion of electric power requirements.

The Biorefinery would include the following components:

- *Buildings.* Four separate buildings would be constructed for administrative offices, security, maintenance and warehousing, fire protection, and the central control room.
- *Parking and Roadways.* A 30,000-square-foot parking area would be constructed near the administrative buildings on the east side of the parcel off the main access point to the Biorefinery from Peru Drive. Access roadways and staging areas also would be constructed throughout the approximate 19.4-acre site.
- *Fencing.* Except for a parking lot in front of the main administrative office, the entire parcel would be enclosed within a security fence.
- *Firewater Storage, Pumping, and Associated Fire Hydrants and Monitors.* There would be one diesel driven firewater pump.
- *Utility Boiler.* A boiler would be installed to provide process steam and be fired on both a process purge gas and natural gas. Boiler water treatment chemicals and equipment storage also would be provided.



SITE PLAN PARCEL 2009-3
16.77 Ac. +/-

NOTES:
1. NOT FOR CONSTRUCTION



<p>DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES (ACQUISITION SENSITIVE, PROPRIETARY INFORMATION) (15 JUN 2012) AND APPROVED CONTRACTORS WITH SIGNED NON-DISCLOSURE AGREEMENTS FOR THIS PROJECT ON FILE WITH THE TITLE III PROGRAM OFFICE. OTHER REQUESTS FOR THIS DOCUMENT SHALL BE REFERRED TO AFRL/RXME, 2977 HOBSON WAY, BUILDING 653, WRIGHT-PATTERSON AFB, OH 45433-7739</p>		<p>NOTICE: THIS DOCUMENT IS THE PROPERTY OF FULCRUM BIOENERGY, INC. AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF FULCRUM BIOENERGY, INC., AND SHALL BE RETURNED UPON REQUEST.</p>		<p>WoodGroup Mustang, Inc.</p>		<p>PROJECT NO: 101022</p>		<p>Fulcrum BIOENERGY</p> <p>FULCRUM SIERRA BIOFUELS, LLC McCARRAN, STOREY COUNTY, NV</p>	
E	02/10/14	DPC	ISSUED FOR FEL DESIGN	DPC	CV	<p>DESIGNED BY: S SUDDUTH</p>		<p>GENERAL ARRANGEMENT OVERALL PLANT - EXPANDED VERSION PRELIMINARY</p>	
D	12/06/13	DPC	REVISED ROAD LAYOUT	TS	RV	<p>DRAWN BY: T STEVENS</p>		<p>DRAWING NO: SP-00-P-GAS-002</p>	
C1	10/24/13	TS	REVISED EQUIP. LAYOUT	TGS	RV	<p>CHECKED BY: M JERNIGAN</p>		<p>REV: E</p>	
B	9/25/13	TS	ADDED EMISSION POINTS	TGS	RV	<p>APPROVED BY: G THOMSON</p>			
A	9/18/13	TS	ISSUED FOR INFORMATION	TGS	MJ	<p>SCALE: 1"=60'-0"</p>			
REV	DATE	BY	DESCRIPTION	CHK	ENGR	APPR	CLIENT	DATE	

Figure 2-1 Biorefinery - Proposed Plot Plan

- *Air compressors and dryers.*
- *Closed Circuit Cooling Water System.* This system would include an evaporative cooling tower and an array of fin-fan air coolers. The circulating water would be treated to prevent corrosion and biological growth. Additional water would be required to make-up for evaporation and blowdown losses.
- *Emergency Power Generation.* This system would include one diesel powered generator to provide electricity during a power outage to allow a safe and orderly shutdown of the Biorefinery.
- *Flare System.* A flare header would collect and route process vent gas streams and relief valve discharge streams to the to a refractory-lined ground flare to be safely combusted before being discharged to the atmosphere.
- *Natural Gas Distribution System.* Natural gas would be supplied to the facility's natural gas metering station by the local natural gas utility. The natural gas would be distributed throughout the facility for use in running the process equipment and the process power boiler and for use as a pilot light in the flare.
- *Air Separation Unit (ASU).* Oxygen (O₂) would be used in the process as part of the syngas generation. Nitrogen (N₂) would be provided for purging equipment of residual chemicals. A vacuum swing absorption ASU will provide high purity cryogenic O₂ and N₂ to the Biorefinery.
- *Product Storage and Loading.* The finished SPK fuel would be routed to one of three product tanks. Once tested and certified that the fuel meets applicable quality standards, the product would be pumped into tank trucks for shipment. An off-spec tank would be provided for storage of any off-spec product requiring reprocessing.
- *Product and Off-spec Storage Tanks.* All product and off-spec storage tanks would be blanketed with N₂ to prevent air from migrating into the tanks' vapor space. The storage tanks and truck loading systems would reside within containment areas to protect against spills and/or leaks. Vapors from the storage tanks would pass through a carbon bed system before being vented to atmosphere.
- *Wastewater Treating.* Water that would not be internally recycled back into the process for reuse or discharged to the sewer would be treated and reused in the Biorefinery. The primary source of this water would be the blow down from the syngas scrubbing system.
- *Storm Water Retention Pond.* A retention pond would be designed and built to retain run-off water equivalent to a 25-year storm. The water would be retained and tested prior to discharge through a treatment device into the TRI Center storm water collection system which provides capacity to retain the equivalent of a 100-year storm.

2.2.1.2 Construction

Facility Construction

Conventional construction materials (e.g., steel, lumber, miscellaneous small parts, concrete, etc.) and construction equipment (e.g., graders, backhoes, cranes) would be used in constructing the Biorefinery. Construction materials and equipment would be delivered to the Biorefinery site via truck or rail. The Biorefinery would be constructed in one phase over 16 months, with additional time needed for mobilization and commissioning. Construction would be expected to commence late in the fourth quarter of 2014 and the Biorefinery would be expected to reach commercial operation early in the third quarter of 2016.

Construction Materials

Construction materials (e.g., metal, lumber, miscellaneous small parts, concrete, etc.) for buildings would be purchased by the local construction contractors from suppliers in the area of the Biorefinery. Deliveries to the site would be by truck using existing surface roads.

Construction Water

Construction water for use in dust control, soil compaction, etc., would be supplied from the TRI Center's existing water supply system installed adjacent to the site in the alignment to Peru Drive. This water would be used for dust control, compaction, and temporary construction activities, (e.g., filling water lines, flushing water lines and portable toilet trailers, etc.). The construction contractor would provide the required water lines to connect to an approved backflow preventer and hydrant meter to the water supply. TRI General Improvement District (TRIGID) would read the meter and bill Sierra BioFuels for actual water consumption during construction. Although two water trucks would be used at the Biorefinery site, it is estimated that approximately 1.7 million gallons of water would be consumed over the 52-week construction period, equivalent to one 5,500-gallon water truck load each construction day. In addition, minor volumes of water (anticipated to be less than 50,000 gallons) would be used for hydrostatic testing of tanks and piping but would be re-used several times before discharge to the evaporation pond. Potable water for construction personnel would come either from the TRIGID existing potable water system in the Peru Drive alignment or from local area suppliers of bottled drinking water.

Sanitation wastewater would be discharged to the TRI Center sanitary sewer system. Construction wastewater would be contained on-site within a retention basin. Water in the retention basin would be left to evaporate or, if needed, tested and released to the TRI Center storm water system.

2.2.1.3 Transportation

Construction

The construction of the Biorefinery is planned to take place over a period of 16 months, and include a series of activities from site preparation with major earth moving equipment, through excavation, installation of concrete foundations, installation of utilities, hauling and lifting major unit equipment pieces, through cleaning, painting, and landscaping. A variety of non-road construction equipment would be used at various points of the construction, including air compressors, dozers, cranes, trucks, forklifts, pumps, and packers. A complete listing of the types of equipment and their associated emission factors, hours of operation, and total emissions can be found in **Appendix B** to this document.

Operation

During operation of the Biorefinery, existing roadways would provide the primary access to the Biorefinery site. Adequate transportation infrastructure (e.g., access roads, railroad links) has been constructed as part of the TRI Center development. Streets within the TRI Center are designed and constructed to carry traffic associated with the I-2 Heavy Industrial zoning and would be able to handle traffic increases resulting from the Biorefinery's daily operations. Access to the Biorefinery site would be via U.S. Interstate 80 (I-80) and USA Parkway. USA Parkway provides access to Peru Drive, approximately 4 roadway miles off of I-80. Peru Drive provides street access directly to the site.

In addition to road access the TRI Center is served by both Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) rail service providers. UP owns the main "east-west" line that traverses the State of Nevada along the I-80 corridor. BNSF has haul rights on the UP line. The Biorefinery has development rights to interconnect to the TRI Center railroad spur on the northern boundary of the site as a means to transport its SPK fuel to its market.

The SPK fuel would be shipped from the Biorefinery by tanker trucks with approximately 8,000-gallon capacity per truckload. It would be possible that rail tank cars could be used in the future, as a rail exists adjacent to the site, but there are no plans to build a rail spur for the shipment of SPK fuel at this time.

Baled feedstock would be delivered to the site by flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of feedstock would be delivered to the Biorefinery daily, 5 days per week. This equates to 20 truckloads each day. The bales would be stored outside on a concrete pad sized to accommodate 2,300 tons of baled feedstock, equal to approximately 4 days of feedstock feed to

the Biorefinery. All unloading and movement of MSW bales would be by forklift. Feedstock would be composed of the organic component of MSW derived from the residual materials remaining after recycling operations. Feedstock includes paper and paperboard, yard trimmings, food scraps, wood, plastics, containers and packaging (such as milk cartons and plastic wrap), and durable (such as furniture) and non-durable goods (such as paper and clothing). The Feedstock would be non-hazardous and would not present a risk to human health.

Assuming the Biorefinery would be staffed using a rotating 12-hour shift rotation, up to 19 vehicles associated with about 32 full time employees employed to work at the Biorefinery at any given time would be anticipated. The Biorefinery would have one to two maintenance vehicles (such as a ¾-ton pickup truck) that would be used to pick up and deliver maintenance supplies from local suppliers. There would likely be a few commercial deliveries per day (e.g., UPS, Fed-Ex, or truck common carrier). Approximately five trucks per day also would deliver supplies to the Biorefinery (such as industrial chemicals) and would transport ash, metal, or other residuals away from the Biorefinery. **Table 2-1** summarizes the estimated maximum total daily trips.

Although the Biorefinery would not usually be open to the public, it would likely attract visitors due to the state-of-the-art nature of the technology. Visitors may average one or two groups per week. All parking would be in the on-site parking lots. There would be a small parking lot outside the security fence for visitors and some employees, but most parking would be within the security fence.

Table 2-1 Biorefinery – Estimated Maximum Total Daily Trips

Traffic Source	Maximum Daily Trips
Feedstock Deliveries	20
Product Shipment	4
Ash Disposal	6
Employees*	19
Commercial and Supply Deliveries	10
Other (including waste hauling, maintenance vehicles and visitors)	23
Estimated Maximum Total Daily Trips	82
New Round Trips per Day	164

* Includes two shifts per day, plus administrative staff.

During routine operations at the Biorefinery site, all vehicles would use a one-way traffic circulation pattern when accessing the Biorefinery and its internal access roads. Alternate traffic patterns may be used during maintenance turn-around at the direction of the Biorefinery's management.

All vehicles accessing the Biorefinery's internal access roads to offload industrial materials or load industrial waste and SPK fuel would use a one-way traffic circulation pattern in a clockwise direction. Vehicles would exit the Biorefinery to Peru Drive using the main plant entrance.

2.2.1.4 Operation and Maintenance

Process Details

This section details the process that would be employed during operation of the Biorefinery. A Site Operating Plan (SOP) would be developed prior to startup of the Biorefinery to provide operations staff with appropriate training on the equipment, processes and systems.

The Biorefinery would receive and process approximately 200,000 tons of non-hazardous baled feedstock each year from the Feedstock Processing Facility. The Biorefinery would convert the feedstock to produce a permitted maximum of 12.3 million gallons of neat SPK fuel annually. The Biorefinery would operate 24 hours a day, 365 days per year. As presently designed, the Biorefinery would have an estimated operational life of 20 to 25 years.

Feedstock Storage and Processing

The feedstock would be prepared offsite at the Feedstock Processing Facility located approximately 15 roadway miles from the Biorefinery, adjacent to the Lockwood Regional Landfill (see Section 2.2.2). The prepared feedstock would be packaged into approximately 1.5-ton polyethylene wrapped bales (each measuring 65 x 43 x 43 inches). The baled feedstock would be transported to the Biorefinery on flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of prepared MSW feedstock would be delivered to the Biorefinery daily, 5 days per week. This equates to 20 truckloads each day.

At the Biorefinery, the feedstock bales would be stored outside on a concrete pad sized to accommodate approximately 2,300 tons of feedstock, equal to approximately 4 days of feed to the Biorefinery. All unloading and movement of feedstock bales would be by forklift.

MSW bales would be fed to the steam reforming gasifier feeder system using a system of conveyors and shredders. The shredders are designed to shred the baled MSW to a one-cubic-inch and smaller size to meet the requirements of the gasification process. A magnet removes any ferrous metal from the feedstock as it drops into the feedstock receiving hopper. The design rate for the gasifier is 550 tons of feedstock per day.

Renewable Biofuel Production Process

Sierra BioFuels would deploy three technologies that, when combined with existing commercial systems, would convert MSW feedstock to SPK fuel. The prepared feedstock would be gasified in a two-stage steam reforming gasification process. This process provides an efficient method of creating a syngas, which consists mainly of H₂, CO₂, and CO. The syngas would then be catalytically converted using a proprietary catalyst, into three intermediate FT products: Heavy FT Liquids (HFTL) product, Medium FT Liquids (MFTL) product and Light FT Liquids (LFTL) product, commonly called naphtha. The naphtha would be recycled to the partial oxidation hydrocarbon reforming (POx) unit with remaining tail gas to be reformed to H₂ and CO. In the last step, hydrotreating, hydrocracking and hydroisomerization upgrading steps are used to upgrade the combined HFTL and MFTL product into SPK fuel.

The following is a general description of the major process steps within the Biorefinery process:

Steam Reforming Gasification Process

The shredded feedstock would be introduced into the steam reformer through four independent plug screw feeders that increase the biomass pressure/density and provide a gas tight seal. The Steam Reformer would be a fluidized bed design, utilizing superheated steam as the fluidizing medium. Proprietary pulse combustion heaters maintain the reformer bed temperature and provide the endothermic energy required for the gasification process. The pulse combustors flue gas would be sent to a utility boiler to recover the waste heat by generating high pressure steam for use in the Biorefinery.

During the gasification process the feedstock rapidly heats up upon entry into the reformer vessel and almost immediately undergoes drying and pyrolysis. The remaining char would then react with the superheated steam. The pyrolysis products would undergo water-gas reactions and, together with simultaneous steam reforming of the char, result in a syngas primarily made up of H₂ and CO, with some hydrocarbons.

The syngas from the steam reformer gasifier would be fed into a POx unit to maximize the H₂ and CO content of the syngas by converting any remaining hydrocarbons to syngas. In addition, several process streams from the FT GTL process and hydroprocessing/fractionation upgrading unit would be recycled to the POx unit for reconversion to syngas. The ash that would be produced in the gasification and POx units would be recovered and cooled, and is currently anticipated to be a salable co-product. It would contain non-leachable environmentally stable material and could possibly be used in a number of products such as construction materials or, if necessary, disposed of in accordance with applicable local, state, and federal regulations in a non-hazardous classified landfill. The syngas exiting the POx unit would be routed to a HRSG. The HRSG cools the syngas and generates high pressure steam.

Syngas Clean-Up and Compression

Syngas from the steam reforming gasification process would next be compressed and ducted to the syngas clean-up process to remove contaminants that can potentially damage downstream equipment and/or affect the FT synthesis catalyst performance. The syngas clean-up would be composed of several different processes. In the first process, a venturi scrubber would capture and remove any entrained particulates. The syngas would then be sent through an amine system to capture and remove sulfur and CO₂. Next the syngas enters the secondary gas clean section composed of layered guard beds to polish sulfur to ppb levels and to remove mercury, mercaptans and arsine contaminants.

Included in the syngas clean-up system would be a water gas shift reactor to adjust the syngas H₂/CO to the ratio required for the FT process and a H₂ recovery membrane unit to harvest H₂ required for the hydroprocessing/fractionating upgrading unit.

Fischer-Tropsch Gas-to-Liquid Stage

The syngas from the gas clean-up section would now be at the required purity and composition for the FT process. In the FT process, the H₂ and CO in the syngas reacts to form long chain paraffinic liquid hydrocarbons as it passes through the catalyst filled FT reactors. The hydroprocessing reactions include saturation of the alcohols and olefins, isomerization/hydrocracking of the alkanes and long paraffinic hydrocarbon chains. The liquid fraction from the reactor contains the HFTL product, which would be filtered and sent to the HFTL intermediate storage tank. The gaseous fraction would be further processed in series through two additional separation and condenser stages to produce MFTL product and LFTL product. The MFTL would be transferred to an intermediate product storage tanks, and the LFTL would be recycled back to the POx unit. Additionally, any syngas that would not be converted in the reactor may be used as tail gas in the pulse combustion heaters, utility boiler or recycled to the POx Unit. Steam jackets on the FT reactors provide cooling to the exothermic FT reactions by generating steam for use within the Biorefinery. The syngas supply lines and FT lines would be provided with a high pressure N₂ purge (from a dedicated N₂ generating station) for emergency shutdown procedures.

Hydroprocessing/Fractionating Upgrading

To upgrade the FT liquids to a finished SPK fuel, the MFTL and HFTL streams would be pumped to a FT liquids upgrading process. The upgrading process utilizes a hydrocracker unit (HCU) and fractionator to convert the FT liquids to SPK fuel. The HCU is a high temperature/high pressure catalytic process that upgrades the HFTL and MFTL streams into an SPK product. The hydroprocessing reactions include saturation of the alcohols and olefins, isomerization/hydrocracking of the alkanes and long paraffinic hydrocarbon chains. Purified hydrogen from the HRU provides the necessary hydrogen for the HCU.

HCU product would be sent to a fractionator for separation and recovery of SPK product. The fractionator light ends, naphtha, and non-condensable off-gas would be recycled back to the POx unit to be re-gasified. The fractionator heavy fraction would be recycled back to the HCU for additional processing. The fractionator SPK product would be routed to storage for final testing and distribution to

customers. The final SPK product will meet the ASTM D7566, Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons.

Sierra BioFuels' SPK fuel can be blended into a final fuel blend product to meet a variety of renewable biofuel products as indicated in **Table 2-2** below:

Table 2-2 Biorefinery – Principal Products

Product	Fuel Type	ASTM/Specification	Drop-in Fuel
Synthesized Paraffinic Kerosene (SPK Fuel)	Jet-A	ASTM D1655	✓
	JP-5	MIL-DTL-5624V	✓
	JP-8	MIL-DTL-83133H	✓

Operations Process Water

Potable quality water would be supplied by the TRIGID. The TRIGID has been created to own, maintain, and operate the community water system to customers in the TRI Center. TRIGID's water resources come from groundwater approved by existing state permits and pumped from wells in the TRI Center. TRIGID constructs additional wells, tanks, and distribution lines as further development occurs in the TRI Center.

The Biorefinery would be designed for a maximum consumptive water rate of 101.3 gpm (gpm) of which, nominally 100 gpm would be utilized in the process units. The remainder of the water demand (approximately 1.3 gpm) would be used for domestic water use (e.g., sanitary services), dust suppression, and miscellaneous maintenance activities. The water supply would enter the Biorefinery site then branch off directly to the firewater system and then to a plant water main and into a 600,000-gallon capacity on-site storage water tank. Toward the end of the construction activities, the water tank would be tested for structural integrity. Clean water supplied by TRI Center would be used to fill the tank. Any water that would be drained from the water processing/cleaning system would collect in the site storm water retention basin and either evaporated or, if necessary, it would be tested and if deemed acceptable discharged.

A majority of the water has been secured through a one-time purchase of 155 acre-feet per annum of water for use on the site. The TRI Center has represented and warranted that it and TRIGID have sufficient uncommitted reserves of non-potable water and has issued a "will serve" letter to Sierra BioFuels. Sierra BioFuels and TRIGID acknowledge that to the extent possible, water needs would be met through the use of non-potable or reclaimed water if or when it becomes available if it meets the water specifications in Sierra BioFuels' water purchase agreement. The "will serve" letter also includes an additional 8.39 acre-feet of potable water per annum, i.e., an additional 0.5 acre-feet per annum per acre of potable water that came with the purchase of the land (Griffith 2010). For domestic water use (not including fire flow and fire demand), TRIGID would provide the Biorefinery with approximately 16.7 gpm of potable water at 40 pounds per square inch (psi), with 500 gallons per day of storage, with a peaking factor of 2. TRIGID also would furnish water for fire protection with a minimum fire water flow from hydrants of 3,000 gpm for 3 hours. The "will serve" letters are provided in **Appendix A**.

Labor and Operations Hours

The Biorefinery would operate 24 hours per day, 7 days per week. The total number of employees and shift schedules are being developed as the design progresses and would be finalized when construction is completed. It would be anticipated that approximately 32 full time employees (scheduled on a 24/7 basis) would be required during operations. Facility operators would be on-site during each shift,

with on-site management personnel provided for all site operations associated with the facilities. The level of employment at the site would be established by the basic business volume and would be sufficient to comply with the requirements of the relevant NDEP rules and regulations. Operations personnel would attend training classes in health and safety, environmental compliance, operations, maintenance, and equipment process safety. Roles and responsibilities of the Biorefinery's key personnel are provided in **Table 2-3** below.

Table 2-3 Biorefinery – Staff Roles and Responsibilities

Position	Roles and Responsibilities
Biorefinery Plant Manager	During Engineering, Procurement and Construction (EP&C) Phase: <ul style="list-style-type: none"> • Assist in development of policies and procedures for training during commissioning, start-up, and eventual operations.
	During the Operational Phase: <ul style="list-style-type: none"> • Responsible for the daily supervision of all Operations and Maintenance (O&M) personnel. • Oversight to ensure a safe, environmentally responsible, and economical operation. • Responsible for annual O&M Plan, budget and monitoring performance. • Oversee development and upkeep of an Operating Management System. • Direct preparation and revisions to O&M policies and procedures, including personnel training and development. • Interface with the community and government agencies as needed for the proper operation of the Biorefinery.
Operations Supervisor	During EP&C Phase: <ul style="list-style-type: none"> • Manage the engineering, procurement and construction effort. • Oversee preparation of operating manuals. • Participate in recruitment and hiring of the O&M staff and manage subsequent training in preparation of commission and operation. • Assist the Construction contractor with start-up activities.
	During the Operational Phase: <ul style="list-style-type: none"> • Manage operations personnel in providing a safe, environmentally sound and cost-efficient operation. • Work with the Maintenance Manager and Technical Manager to ensure equipment is maintained in proper working order.
Plant Operators	During the Operational Phase:
	<ul style="list-style-type: none"> • Responsible for conveying feedstock from storage in into the gasification system. • Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes.

Table 2-3 Biorefinery – Staff Roles and Responsibilities

Position	Roles and Responsibilities
Maintenance Manager	During the EP&C Phase: <ul style="list-style-type: none"> • Responsible for review of the design and layout of the Biorefinery equipment to ensure safe and maintainable operation. • Participate in recruitment and hiring of the O&M staff and manage subsequent training in preparation of commission and operation. • Participate in recruitment and hiring of the O&M staff and manage subsequent training in preparation of commission and operation. During the Operational Phase:
	<ul style="list-style-type: none"> • Responsible for planning and execution of maintenance. • Oversee preparation and upkeep of maintenance and repair manuals. • Responsible for maintenance and repair related quality assurance/quality control program.
Sorters / Quality Control Staff	During the EP&C Phase: <ul style="list-style-type: none"> • Resolve issues that would arise as detail design work is finalized. During the Operational Phase:
	<ul style="list-style-type: none"> • Lead the engineering, inspection, and environmental, health and safety teams. • Provide technical support to the operations and maintenance departments. • Maintain and update engineering documents and communicate changes with personnel. • Review and recommend process and equipment modifications.

Facility Security

Public access would be controlled to minimize unauthorized vehicular traffic and public exposure to hazards associated with facility operations. There are only two locations for ingress and egress to the Biorefinery, each controlled by a gate. The main employee entrance would be equipped with an employee cardkey entry system. Only vehicles authorized by the Operation's staff would be allowed to have access beyond the facility proper. Signage and/or on-site personnel would provide directions to the unloading and loading areas.

Fire Protection

The SCFD provides firefighters and emergency response personnel as first responders to an accident, emergency, and other incidents requiring medical attention in Storey County.

The Biorefinery's SOP will include, an emergency response plan (ERP) and a Fire and Life Safety Plan to protect personnel, property, and mitigate emergencies and any environmental effect. The Fire and Life Safety Plan must be submitted to the SCFD for review prior to the issuance of building permits.

The following steps would be taken regularly at the Biorefinery by designated personnel to prevent fires:

- Operators would be alert for signs of burning waste such as smoke, steam, or heat being released from baled feedstock.

- Equipment used to move feedstock waste would be routinely cleaned through the use of high pressure water or steam cleaners. The high pressure water or steam cleaning would remove combustible and caked material that could cause equipment overheating and increase fire potential.
- Smoking would not be permitted within the facilities. Smoking would only be permitted in designated smoking areas.

The Biorefinery personnel would take the following steps if a fire is discovered:

- Contact the SCFD by calling 911. The SCFD has equipment and other assets that can respond rapidly to fires at the sites.
- Alert other facility personnel.
- Assess the extent of the fire, possibilities for the fire to spread, and alternatives for extinguishing the fire.
- If it appears that the fire can be safely fought with available firefighting equipment until arrival of the SCFD, attempts to contain or extinguish the fire should be used.
- Upon arrival of the SCFD personnel, direct them to the fire and provide assistance as appropriate.
- Do not attempt to fight the fire alone and without adequate personal protective equipment.
- Establish familiarity with the use and limitations of firefighting equipment available on-site.

Methods for fighting fires would be determined based on the type of fire discovered:

- *Feedstock Fire.* Firefighting methods for burning feedstock include water spray, smothering the feedstock with a backhoe bucket or separating the burning material from other feedstock. Small fires also can be controlled with hand-held extinguishers. If a fire occurs on a vehicle or piece of equipment, the equipment operator should attempt to bring the vehicle or equipment to a safe stop. If safety of personnel allows, the vehicle would be parked away from feedstock supplies and other vehicles. The engine would then be shut off and the brake engaged to prevent movement of the vehicle or piece of equipment. The feedstock storage area would be equipped with fixed fire monitors to allow rapid application of a large quantity of water in a very efficient discharge pattern to control and extinguish a fire quickly.
- *Hydrocarbon Fire.* Hydrocarbon fires cannot be controlled effectively with water; instead, they must be smothered with the careful application of alcohol resistant foams. An adequate supply of alcohol-resistant aqueous film forming foam and application equipment would be maintained by the SCFD at the SCFD's Station 5 located in the TRI Center.

Fire extinguishers would be maintained on all delivery and transport vehicles entering the facilities and on operation equipment in the enclosed feedstock storage area. All fire suppression equipment would be fully charged and ready for use. Inspection and recharging would be performed following each use. The fire suppression equipment would be inspected on a regular basis. A qualified service company would perform these inspections and all extinguishers would display a current inspection tag. Records would be maintained indicating equipment inspected, date of inspection, and name of the person conducting the inspection. The intervals for inspection would be as follows:

- *Portable Fire Extinguishers.* Weekly visual inspection, annual inspection, and certification by an approved service company.
- *Hose Stations.* Weekly visual inspection, annual inspection, and certification by an approved service company.

- *Automatic Sprinkler Systems.* Annual inspection and certification by an approved agency or service provider.
- *Emergency Firewater Pump.* Weekly testing.

Training of on-site personnel in firefighting techniques, fire prevention, response, and the fire protection aspects of the SOP would be provided by established professionals as part of initial employee training and on an annual basis. Personnel would be familiar with the use and limitations of firefighting equipment available on-site. Records of this training would be included in the operating record for the facilities. When the detailed design of the Biorefinery equipment has been completed, Sierra BioFuels will review requirements under all applicable federal, state and local regulations, including those under EPCRA, and amend the Biorefinery's SOP, as necessary.

Industrial Materials

Industrial materials and waste used or produced by the Biorefinery and the storage methods and quantities stored on site are shown in **Table 2-4**. Initial chemical supplies would be purchased based upon usage recommendations from the equipment suppliers. The Biorefinery would purchase and store chemicals in two size categories, specialty chemicals and bulk chemicals. The specialty chemicals would be purchased in small quantities (i.e., less than 100 pounds) and stored in their original packaging in secured cabinets. Bulk chemicals would be purchased in large quantities and stored in aboveground storage tanks, totes, or bins designed for holding such chemicals. The expected industrial chemicals at the Biorefinery include:

- *Boiler Water Treatment Chemicals.* Boiler water treatment chemicals would be purchased in special, returnable containers from the company providing the water treatment services.
- *Catalysts.* The catalyst would be purchased in drums. Spare catalysts would not typically be stored on-site since catalyst replacement would be scheduled in advance. Replacement catalysts would be ordered from the catalyst supplier as needed.
- *Lube Oil.* Lube oil would be supplied in drums and stored.
- *Oxygen and Nitrogen.* The vacuum pressure swing ASU will provide gaseous O₂ to the Biorefinery at a minimum purity of 93 mol%. The O₂ is used in the steam reforming gasification processes. High purity N₂ is generated in a separate pressure swing absorption package in the ASU at 99.5 mol%. The N₂ is distributed throughout the Biorefinery via a distribution header for use as an inert gas.
- *Diesel Fuel.* Diesel fuel would be used by the Biorefinery's operation equipment, the emergency electric generator, and the emergency firewater pump. Up to 3,500 gallons of diesel fuel would be stored in three aboveground storage tanks at the Biorefinery.

The SPK fuel would be transported off-site by truck. The inert material and process residue also produced would be transported via truck to an appropriate disposal site. The gasifier tramp material (e.g., ferrous and non-ferrous metals) would be stored in removable on-site containers until a sufficient quantity is developed to warrant transportation to a recycler and a replacement container would be put in place.

Table 2-4 Industrial Materials and Waste at the Biorefinery

Reference No.	Inventory Item	Quantity ¹	Type of Container
	Feedstock		
1	Processed Feedstock	2,300 tons	Shrink Wrap Bales
	Products		

Table 2-4 Industrial Materials and Waste at the Biorefinery

Reference No.	Inventory Item	Quantity ¹	Type of Container
2	SPK Jet Product Storage Tank	360,000 gallons	Tank
3	Off Spec Storage Tank	30,000 gallons	Tank
	Industrial Chemicals		
4	Sulfur Removal Unit (SRU) Process Solution	90,000 gallons	Process Tank
5	SRU Solution	1,000 gallons	Tank
6	SRU Potassium Hydroxide Solution	2,500 gallons	Tank
7	SRU Chemicals	3 totes	Totes (550 gal)
8	COS Guard Bed Media	495 ft ³	Pressure Vessel
9	Mercury Guard Bed	375 ft ³	Pressure Vessel
10	Sulphur Guard Bed	519 ft ³	Pressure Vessel
11	Arsine Guard Bed	113 ft ³	Pressure Vessel
12	F-T Reactor (2) Catalyst	2,000 ft ³	Pressure Vessel
13	Particulate Guard Bed	760 ft ³	Pressure Vessel
14	Water Gas Shift Reactor Catalyst	452 ft ³	Pressure Vessel
15	Hydrotreater Reactor Catalyst	250 ft ³	Pressure Vessel
16	Hydrocracking Reactor Catalyst	450 ft ³	Pressure Vessel
17	Amine Solution	20,000 gallons	Pressure Vessels
18	Amine Storage	2 totes	Totes (550 gal)
19	Emergency Generator Diesel Fuel	2,000 gallons	Tank
20	Firewater Diesel Fuel	2,000 gallons	Tank
21	Cooling Tower Chemicals	6 totes	Totes (550 gal)
22	BFW Treatment Chemicals	10 totes	Totes (550 gal)
23	ASU VSA Molecular Sieve (4)	18,000 ft ³	Pressure Vessel
24	N ₂ PSA Molecular Sieve (2)	8,000 ft ³	Pressure Vessel
25	Mobile Equipment Diesel Fuel	2,000 gallons	Tank
26	Lube Oil System	1000 gallons	Tank
27	Lube Oil Storage	10 drums	Drum
28	Hydraulic Oil System	2,000 gallons	Tank
29	Hydraulic Oil Storage	10 drums	Drum
30	Liquid N ₂	30,000 gallons	Tank
31	Liquid Oxygen	80,000 gallons	Tank
32	Gasifier Bed Media	120 tons	Pressure Vessel

Table 2-4 Industrial Materials and Waste at the Biorefinery

Reference No.	Inventory Item	Quantity ¹	Type of Container
34	Bed Media Storage	250 tons	Hopper
36	Caustic	24,000	Tank
37	Anti-Foam (amine system)	2 totes	Totes (550 gal)
38	Selective Catalytic Reduction Catalyst	5,000 gallons	Boiler Stack
39	Aqueous Ammonia	10,000 gallons	Pressurized Tank
40	Anti-Oxidant (product spec)	2 totes	Totes (550 gal)
41	Conductivity Improver (product spec)	2 totes	Totes (550 gal)
42	Waste Water Treatment Chemicals	4 totes	Totes (550 gal)
	Industrial Waste		
43	Recovered Ferrous Metal	20 tons	Movable Container
44	Sulfur Cake	20 Tons	Movable Container
45	Fly Ash	40 tons	Movable Container
46	Bottom Ash	40 tons	Movable Container
47	Gasifier Inert Material	40 tons	Movable Container
48	Waste Water Treatment Solids	40 tons	Movable Container

¹ Data represent maximum quantities. Actual stored quantities would be equal or less than these quantities.

Industrial Wastes

No disposal of waste or process residuals would take place at the Biorefinery. The Biorefinery would generate industrial wastes (see **Table 2-4** above) that would be continually produced by the process and those that would occur on a periodic basis, generally resulting from a change in catalysts or periodic maintenance work. The continually produced wastes would be taken off-site for disposal in an appropriate facility, including a licensed facility, if necessary. Sierra BioFuels would evaluate the markets for potential byproducts to determine if there would be a beneficial use, such as sulfur for agricultural uses or for construction materials or roadbeds; however, such possibilities have not yet been identified. Expected industrial wastes at the facilities are discussed below, unless otherwise indicated wastes are classified as non-hazardous:

- *Ferrous Metals (continuous)*. Ferrous metals may be recovered from the feedstock prior to it being feed into the steam reformer gasification system. Suitable quantities would be stored on-site until recycled.
- *Sulfur (continuous)*. Sulfur would be removed from the syngas in the syngas cleaning process. The sulfur would be in the form of a wet sulfur cake. It would be packaged in movable 20-ton containers and taken to an off-site facility for disposal.
- *Filtered Particulate Matter (Ash)*. The syngas processing system filter removes particulate matter from the syngas prior the sulfur removal system. This material would be dry and expected to be composed largely of inert fine particulate materials, and it may contain trace amounts of metals. Upon being tested for toxicity the material would be either: 1) if found to be non-hazardous, it would be either put to a beneficial use (e.g., construction material) or sent to a landfill for

disposal; or 2) if it is a hazardous material, it would be sent for treatment and disposal at a licensed facility operated by U.S. Ecology, in Beatty, Nevada, or Grand View, Idaho.

- *Gasifier Inert Material (continuous)*. Ferrous and non-ferrous metals would be removed from the gasification system. Suitable quantities would be stored on-site until recycled.
- *Water Treating Salts (continuous)*. Salts may be produced as a result of condensation from the Biorefinery's water treatment system. These would be dewatered and disposed of at an appropriately licensed disposal facility.
- *Spent Adsorbents and Catalysts (periodic)*. Spent adsorbents and catalysts would generally be replaced during periodic scheduled maintenance activities and plant shutdowns. The spent materials would be stored and tested prior to disposal. Some materials may have to be disposed of as a hazardous waste depending on the vendor material characteristics, which have not yet been identified.

Wastewater Management

Sanitary Wastewater

The primary source of sanitary wastewater would be the restrooms, showers, and kitchen areas of the Biorefinery. Sanitary wastewater usually contains pathogenic microorganisms that dwell in the human intestinal tract. It also contains nutrients, which can stimulate the growth of aquatic plants and organic compounds that can produce malodorous gasses. All sanitary wastewater generated at the Biorefinery would be discharged directly to the TRI Center sanitary sewage system.

Process Wastewater

The Biorefinery's process wastewater would be generated primarily from two sources: 1) composed of blowdown and condensate from the syngas scrubbing system; and 2) water produced by FT synthesis. The waters from the syngas scrubbing system generally have inorganic contaminants while the water from the FT section has organic contaminants. The process wastewater would be piped to the wastewater treatment system to be treated for recycle/re-use in the Biorefinery. The Biorefinery would have an on-site Zero Liquid Discharge (ZLD) water treatment plant. All water entering the wastewater treatment plant would be treated and returned to the Biorefinery for reuse, except a small amount which would be entrained in the non-hazardous waste material that is shipped off-site for disposal. The process streams feeding water to the wastewater treatment plant are identified in **Table 2-5**.

Table 2-5 Process Streams to Wastewater Treatment Plant

Syngas Scrubber	Sulfur Removal Unit
Contact Cooler	Compressor Knockout Drum
FT Water	Cooling Tower Blowdown

The wastewater treatment system would utilize several treatment processes to treat and remove both organic and inorganic materials from the wastewater stream to maintain the water recycle to the Biorefinery. These would include: filtration, dissolved air floatation, decarbonization, hydrocarbon adsorption, anaerobic biological treatment and aerobic biological treatment that would remove suspended solids, trace hydrocarbons and dissolved CO₂. Solids removed from the wastewater treatment system would be collected and disposed off-site.

Storm Water

Federal law prohibits the introduction of storm water into sanitary sewerage systems. Roof drains, yard drains, and other surface water drains that manage only precipitation runoff would be routed to the storm water drainage system managed by the TRI Center. The facilities' storm water drainage system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

The Biorefinery's storm water runoff water would be collected and routed to the storm water retention basin which would be designed to retain runoff water equivalent to a 25-year storm. Water initially enters into a smaller segregated inlet section of the storm water basin. If the quantity of runoff water exceeds the capacity of the inlet basin, the water would overflow the inlet basin overflow weir into the main retention section of the basin. If the storm water basin capacity should be reached during an event such as a major rainstorm, runoff water gravity flows from the Biorefinery to the off-site TRIC Center retention pond through a series of storm water canals and weirs. The TRI Center storm water collection system provides capacity to retain the equivalent of a 100-year storm.

Two separate submittals are required for regulation of storm water. Prior to the commencement of construction, the Sierra BioFuels would be required to submit a NOI to the NDEP – Bureau of Water Pollution Control (BWPC) for coverage under the State of Nevada's Storm Water General Permit NVR100000 for storm water discharges associated with large construction activities. A SWPPP would be completed and maintained on-site. Prior to the commencement of operation, Sierra BioFuels also would submit a NOI to the NDEP, for coverage under the State of Nevada's General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit NVR050000). The Sierra BioFuels would be required to have a SWPPP completed and maintained on-site in order to operate the Biorefinery.

Spill Control

All employees would be trained to respond to spills or leaks from tanks, vehicles, and equipment. Steps to be taken when there is a spill detected would include:

- Stop processing, loading and/or unloading, and halt vehicle movement, as necessary;
- Secure the area;
- Identify the source;
- Notify the supervisor/manager;
- Properly clean up the affected area; and
- Document the incident.

Clean-up/spill response equipment would be placed in designated areas and clearly marked. Spill response equipment would include:

- Absorbent materials;
- Shovels, brooms; and
- Personal protection equipment (e.g., coveralls, gloves, glasses, etc.).

The Biorefinery would have 16 aboveground storage tanks on site. The facility storage tanks would be designed and installed with secondary containment equivalent to 110% of the capacity of the tank(s), which will prevent any releases to the environment. For aboveground tanks and SPK fuel loading, the operation's personnel would be required to:

- Conduct regular inspections to detect leaks and spills;
- Verify sound condition of containment structures;
- Label storage tanks with product name and potential health or safety hazards;
- Use spill and overfill protection when fueling vehicles;
- Not allow unattended fueling;
- Install safe-guards to prevent vehicles' wash water from mixing with storm water;
- Clean up leaks and spills immediately; and
- Not allow process water and storm water to mix.

Environmental Control Design and Process Features

The design and process features of the Biorefinery that would minimize environmental impacts are discussed below.

Dust Control

Primary access roads are paved and on-site roadways would be paved, considerably reducing the potential for dust generation resulting from mud and dirt being tracked onto the roadway network. The Biorefinery's internal roadways would be swept as necessary to minimize dust generation.

Vector Control

Vectors such as rodents, flies, and mosquitoes would be controlled by proper daily facility operations and housekeeping practices such as cleaning up spills, maintaining roadways, and washing of equipment. Insect and rodent bait would be used to control populations of these vectors. If necessary, a licensed professional would apply pesticides for control of vectors to ensure that proper chemicals are used and applied.

Windblown Material Control

Windblown material at the Biorefinery would be controlled through several methods, including proper unloading of feedstock, picking up litter, perimeter fences, and landscaping. Adequate staffing would be in place to ensure that these measures are taken. Personnel would police the Biorefinery, including perimeter fences, access roads, and the entrance gate, every operating day to pick up and return any windblown material to the Biorefinery, as necessary.

During transport, the Operator would take steps to ensure that flatbed trucks delivering baled feedstock to the Biorefinery effectively secure the load in order to prevent the escape of any part of the load by blowing or spilling during transport. On days when the facilities are in operation, the Operator would be responsible for cleanup of any feedstock spilled along and within the rights-of-way (ROWs) of the public access roads serving the Biorefinery. Maintenance activities would include a once per day cleanup of spilled feedstock.

Wildlife Nuisance Control

Sierra BioFuels would work with Nevada Division of Wildlife (NDOW) on wildlife attraction nuisance issues if wildlife nuisance becomes an issue at the site of the Biorefinery. Facility personnel would monitor the grounds for wildlife mortalities during construction and operation. Any wildlife mortalities would be reported to NDOW annually.

2.2.1.5 Decommissioning

A Closure Plan would be prepared for the Biorefinery and submitted to the Storey County Planning Department. Should it be necessary to close the Biorefinery, the following steps would be taken:

- When determined that the facility would no longer be needed or ceases operations, a written notice would be filed with the Storey County Planning Department 180 days prior to the date of closure.
- Within 30 days after receiving the last load of feedstock, the Biorefinery would be cleared of all remaining feedstock, industrial materials, industrial wastes, litter, and inoperable equipment in accordance with the Closure Plan.
- The site would be secured (i.e., padlocks on the access gates and all the doors of the buildings would be locked).
- All remaining feedstock stored, and/or processed at the Biorefinery would be transferred to a landfill.
- All SPK fuel and other organic compounds would be removed from the site and transferred to an authorized material dealer.
- All industrial wastes and waste residues would be removed from the site and transferred to an authorized disposal facility and/or material dealer.
- Mobile equipment (e.g., transfer trailers, wheel loaders, forklifts, etc.) would be moved to another site, sold, scrapped, or otherwise disposed of. Building components (e.g., lights, electrical systems, doors, etc.) would be left in place for future use and to keep the building secure.
- Operating records would be transferred to the Biorefinery's owner and properly maintained.
- General cleanup of the site and buildings would be performed.
- A closure certification would be prepared by a registered professional engineer and submitted to the Storey County Planning Department for approval that the Biorefinery has been closed in accordance with the approved Closure Plan.

Upon determination that the Biorefinery would cease operation, a notice would be filed with the Storey County Planning Department that would outline the schedule for closure of the Biorefinery. The anticipated schedule and steps to be taken to close the Biorefinery are as follows:

- No later than 180 days prior to initiation of closure activities of the Biorefinery, Sierra BioFuels would provide written notification to the Storey County Planning Department of the intent to close the Biorefinery.
- Barriers or gates would be installed at access points following the closure date to prevent unauthorized entry into the Biorefinery. Padlocks would be installed on the gates and the building doors would be locked or padlocked.
- Closure activities at the Biorefinery would be completed (as described above) within 180 days following the initiation of closure activities.
- Within 10 days after completion of closure activities, a documented certification, signed by an independent registered professional engineer, would be submitted to the Storey County Planning Department. This certification would verify that final closure has been completed in accordance with this Closure Plan. This certification would include all applicable documentation necessary for certification of closure. Once approved, this certification would be placed in the Biorefinery's operating record.

Since all materials would be removed from the site, there would be no requirement for a post-closure period. As part of the closure certification, the Biorefinery would request Storey County Planning Department confirmation that a post-closure period would not be needed. This request would include a documented certification by an independent professional engineer verifying that post-closure care maintenance would not be necessary in view of the closure procedures (e.g., removal of all materials from the site and the other closure steps as noted above) being implemented. In any event, the

Biorefinery would retain the right of entry and maintain all ROWs for the closed facility for a period of at least 5 years after completion of closure unless the Biorefinery would be put to some other use or divested to a third-party.

2.2.1.6 Permits, Approvals, and Authorizations

A status of permits, approvals and authorizations associated with the Biorefinery is provided in **Table 1-3**.

2.2.2 Feedstock Processing Facility

2.2.2.1 Facility Description

The Feedstock Processing Facility is being designed to process non-hazardous, MSW into feedstock. The Feedstock Processing Facility would be located on approximately 14.4 acres, in the industrial area near the community of Lockwood, Storey County, Nevada, adjacent to the Lockwood Regional Landfill located at 2401 Canyon Way, Storey County, as shown in **Figure 3-1**, in Chapter 3.0.

After processing the MSW at the Feedstock Processing Facility, the following three major categories of materials will be transported offsite:

- *Baled feedstock:* The baled MSW would be transported to the Biorefinery on flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of feedstock would be delivered to the Biorefinery daily, 5 days per week. This equates to 20 truckloads each day;
- *Recoverable material:* Recovered material, including but not limited to ferrous and nonferrous metals, cardboard, plastics, paper, and other recyclable materials would be recovered from the MSW and shipped to the commodities markets; and
- *Residual material:* Residual material not used as feedstock or recovered for recycling (concrete, dirt, fines, etc.) would be transported to and disposed of at the Lockwood Regional Landfill. A truck loading conveyor would load and distribute residual material into transfer trailers for shipment to the landfill.

A Site Plan of the Feedstock Processing Facility is provided in **Figure 2-2**. The Feedstock Processing Facility would be broken up into several areas:

- Scale;
- Trailer Tippers & Tipping Floor Management;
- Infeed Conveyors and Presort Station;
- Shredding, Screening, Air Separation, Recyclable Recovery, and Quality Control;
- Baling of Materials: Feedstock Production, Metals, and Recyclables;
- Loading of Baled Feedstock, Recovered Material, and Residual Materials; and
- Dust Collection System-wide.

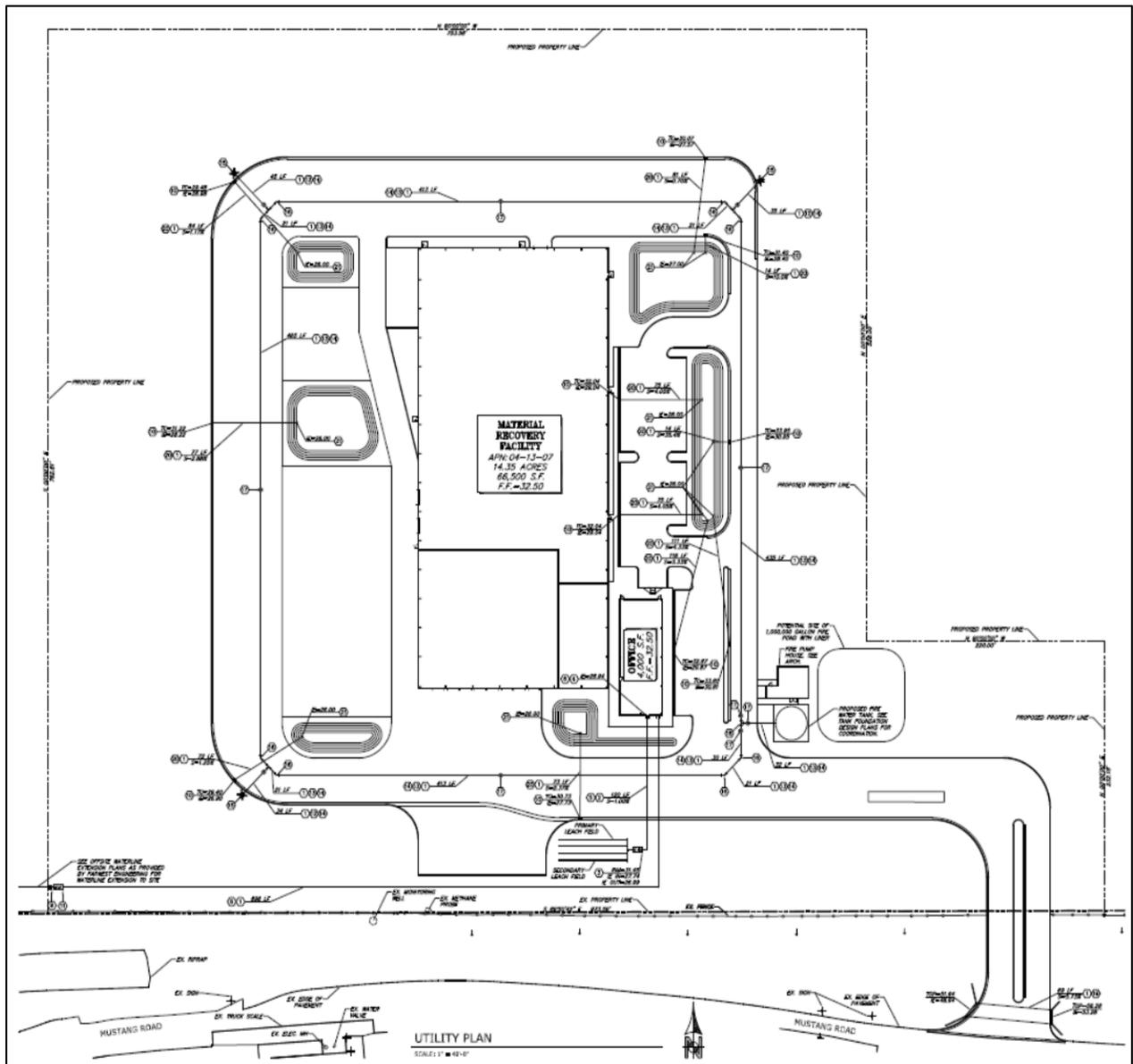


Figure 2-2 Feedstock Processing Facility – Plot Plan

All inbound MSW would be weighed in at the Lockwood Regional Landfill scale house. Inbound MSW would be unloaded using tippers outside the building to discharge MSW onto the tipping floor. The MSW would be inspected and monitored by loader operators after tipping. MSW would be pushed by loaders into in-feed conveyors for processing. The processing equipment would separate materials by using mechanical and manual sorting techniques. An initial pre-sorting station would remove large items, cardboard, and improperly disposed hazardous materials. After pre-sorting, the system would shred, screen fine materials, and air separate dry and light materials for feedstock (e.g., wood waste, paper, clothes, and plastic materials) from wet and heavy materials (e.g., concrete, asphalt, inerts and wet waste) which would be shipped out as Residual Materials. In addition, Recovered Materials (e.g., ferrous and nonferrous metals) would be sorted for the materials. Quality control and sorting stations would be designed throughout the Feedstock Processing Facility to maximize diversion, ensure feedstock quality, and limit Residue Material production. Feedstock would be baled and wrapped for shipment to the Biorefinery. Recovered Material would be loaded into roll-off boxes or baled for shipment to market. The Residual Materials would be loaded into transfer trailers for shipment to the landfill.

2.2.2.2 Construction

Facility Construction

Conventional construction materials (e.g., lumber, steel, miscellaneous small parts, concrete) and construction equipment (e.g., graders, backhoes, cranes, etc.) would be used in constructing the Feedstock Processing Facility. Construction materials and equipment would be delivered to the site via truck. The Feedstock Processing Facility would be constructed in one phase over 12 months, with additional time needed for commissioning and acceptance testing of the processing equipment. Construction would be expected to commence in the first quarter of 2015 and the Feedstock Processing Facility would be expected to reach commercial operation early in the second quarter of 2016.

Construction Materials

Construction materials for buildings would be purchased by the local construction contractors from suppliers in the area of the Feedstock Processing Facility. Deliveries to the site would be by truck using existing surface roads.

Construction Water

Construction water for use in dust control, soil compaction, etc., would be supplied by the construction contractor. This water would be used for dust control, compaction, and temporary construction activities, (e.g., filling water lines, flushing water lines and portable toilet trailers, etc.). The construction contractor would provide the required water lines to connect to an approved backflow preventer and hydrant meter to the water supply. Potable water for construction personnel would come from local area suppliers of bottled drinking water.

Sanitary waste would be treated in temporary toilets. The construction contractor would provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material for use by all contractors and subcontractors on the site. The number of units should be adequate to provide safe sanitary service for all on-site contractor personnel, and should meet any and all applicable code requirements.

2.2.2.3 Transportation Infrastructure

Construction

The construction of the Feedstock Processing Facility would include a series of activities from site preparation with major earth moving equipment, through excavation, installation of concrete foundations, installation of utilities, hauling and lifting major unit equipment pieces, through cleaning, painting, and site regarding and landscaping. A variety of non-road construction equipment would be used at various

points of the construction, including air compressors, dozers, cranes, trucks, forklifts, pumps, and packers. A complete listing of the types of equipment and their associated emission factors, hours of operation, and total emissions can be found in **Appendix C** to this document.

Operations

Access to the Feedstock Processing Facility would be from Exit 23 of I-80 to the southern Frontage Road and then to Mustang Road, which leads to the gated entrance and private road of the Lockwood Regional Landfill. All roads are existing and currently paved. On-site access to the Feedstock Processing Facility would be provided by a 30 foot wide paved all-weather main entrance. All parking lots and internal roads of the Feedstock Processing Facility would be paved. Signage would provide direction to the public to the Feedstock Processing Facility's administration building and visitor parking. Additional signage and on-site personnel within the Feedstock Processing Facility would provide direction to the transportation vehicles as they arrive at the main gate. Operations at the inbound MSW unloading area, including providing sufficient maneuvering room and guidance from the gate attendant, would be conducted in a manner that allows the prompt and efficient unloading of MSW.

Off-road access to the site is limited by the following:

- A minimum 8-foot fence (chain-link with slats or solid) encloses the site.
- Feedstock Processing Facility personnel enter through the main ingress and egress, to the northeast of the Lockwood Landfill scale house.
- An emergency alternative access road is planned to the southwest corner of the site.

The estimate of traffic levels to and from the Feedstock Processing Site is provided in **Table 2-6**, based on the total mass (tons per day) of inbound and shipped materials. **Table 2-6** also provides the levels of existing traffic (trucks per day) to the landfill, which is the total inbound MSW (64 truck loads per day) that would be "diverted" to the Feedstock Processing Facility site instead of traveling farther to the face landfill. The feedstock processing operations would process and separate residual material, estimated at 24 trucks per day for continued shipment to the landfill. Shipment of this residual material would be considered "existing operations" because this material would have been trucked over the remaining short distance to the landfill. Therefore existing traffic would consist of both the inbound and residual material shipments, all of which would have gone to the landfill anyway.

During normal operations (e.g., 5-day per week processing) at the Feedstock Processing Site, there would be approximately 138 total new trips (69 round trips) per day resulting from the operation of the Feedstock Processing Facility. The new traffic includes the shipment of baled feedstock to the Biorefinery, recovered materials that are shipped to other customers, and employee traffic, as shown in **Table 2-6**.

Table 2-6 Feedstock Processing Facility – Trips and Tons Transported per Day (5-day Week Processing)

	Inbound MSW	Baled Feedstock	Residual Material	Recovered Material	Employees
Tons per Day (7-Day Week)*	1,100	550	428	122	
Tons per Day (5-Day Week)	1,540	770	599	171	
Load Capacity (tons/truck)	24	40	25	25	
Number of Loads (Trucks/day)	64	20	24	7	
Number of Employees(No./Day)					42

Table 2-6 Feedstock Processing Facility – Trips and Tons Transported per Day (5-day Week Processing)

	Inbound MSW	Baled Feedstock	Residual Material	Recovered Material	Employees
Existing Trips to Landfill (No/Day)	128		48		
New Trips per Day**		40		14	84

* For optional 7-day week processing, which is not planned but must be available when needed.

** Two trips per round trip

During normal operations, all vehicles, would utilize a one-way traffic circulation pattern when accessing the facility and its internal access roads. Alternate traffic patterns may be used during maintenance turn-around at the direction of Feedstock Processing Facility management.

All vehicles accessing the Feedstock Processing Facility would enter the main entrance and exit, to the east, along the south side of the site. All inbound MSW would be weighed at the Lockwood Regional Landfill scale. Identified loads for the Feedstock Processing Facility would be directed to enter the Feedstock Processing Facility to the left, instead of proceeding to the face of the landfill. All outbound feedstock, Recovered Materials, or Residual Materials would be weighed out using the Feedstock Processing Facility's outbound scale.

Employees and visitors would enter and exit the Feedstock Processing Facility using the main gate, then access the employee and visitor parking area, exiting through the same gate.

2.2.2.4 Operation and Maintenance

Process Details

This section details the process that would be employed during operations of the Feedstock Processing Facility. A Design Report and an SOP would be developed pursuant to NDEP-BWM regulations, as part of the application for a solid waste permit. The SOP would provide operations staff with the appropriate training on the equipment, processes and systems.

The primary material processed at the Feedstock Processing Facility would be MSW to produce baled feedstock. Secondary materials would include Recovered Materials (e.g., recyclable commodities) and Residual Materials. Recovered Materials, including ferrous and nonferrous metals, and at various times corrugated cardboard and plastics, which may be sorted from the MSW to ensure the feedstock meets the specification required by the Biorefinery. Residual Materials include inert materials and fines. These materials would be stored, handled, used and disposed or recycled in accordance with all applicable local, state and federal regulations.

The Feedstock Processing Facility would typically be expected to operate 5 days per week to coincide with the operation of the Lockwood Regional Landfill, but would be permitted to operate 24 hours per day, 365 days per year, which would allow for operation of the facility 7 days per week during times of equipment maintenance and repair. The Feedstock Processing Facility would have the capacity to process approximately 400,000 tons of inbound MSW into approximately 200,000 tons of baled feedstock annually. As presently designed, the Feedstock Processing Facility has an estimated operational life of 25 to 30 years.

Inbound MSW delivered to the Feedstock Processing Facility would not contain the following materials:

- Regulated Hazardous Waste (as defined by NAC 44.843);
- Polychlorinated Biphenyl Waste;
- Bulk or Noncontainerized Liquid Waste;
- Sludges and Other Wastewater Treatment Solids;
- Radioactive Waste;
- Asbestos and asbestos-containing materials; and
- Source Separated Special Waste (used tires, medical waste, used oil and filters, batteries), except such Special Waste deemed to be “Household Waste” that has been processed by MRFs during their normal course of business that may be commingled in the feedstock and accepted.

Feedstock Processing Facility personnel would be trained to inspect vehicles and identify items that may contain prohibited wastes. Equipment operators and sorters would be trained in inspection procedures for prohibited materials. Supervisors would provide regular training (on the job basis) to operational personnel to ensure proper inspection and screening for these items. Records of employee training on prohibited materials control procedures would be maintained in the Feedstock Processing Facility operating records.

MSW Processing System

All MSW would be handled in such a manner that it does not constitute a fire, safety, or health hazard or provide food or harborage for animals or vectors. A process flow diagram of the feedstock processing system is provided in **Figure 2-3**. The MSW would be delivered by truck and a trailer tipper would be used to unload the MSW onto a “tipping floor,” located in an enclosed MSW processing building. A front-end loader would be utilized to push the MSW into an in-feed conveyor to carry material to the processing lines for shredding, screening, and separation. The tipping floor would allow storage of approximately 400 tons of inbound MSW. The MSW would be processed in general based on a first-in, first-out basis. Operations would protect worker health and safety, including the wrapping of the feedstock for handling and storage, the active cleanup of any spills, and maintenance of a clean facility. All operations would conform to requirements of OSHA and other worker protection and safety regulations.

Floor Sort

The loader operators would screen all MSW loads as they would be tipped from the transfer trailer onto the tipping floor. The loader operator would identify and separate any items that would be too large or difficult to resize and place them in a reject dumpster for shipment as residual to the landfill or place them in a recycling dumpster for shipment to market. Any prohibited materials would be identified and segregated for removal by the company delivering the material. Once material would be screened, the loader operators would push material onto the in-feed conveyor to the processing lines for shredding, screening, and separation.

Presort

The MSW processing begins with a manual sort station to remove large items from the inbound MSW. Such items include cardboard, large metal pieces, hazardous waste, and other materials to be removed from the MSW before shredding. The elevated pre-sort platform would have chutes to drop such items into bunkers below for processing.

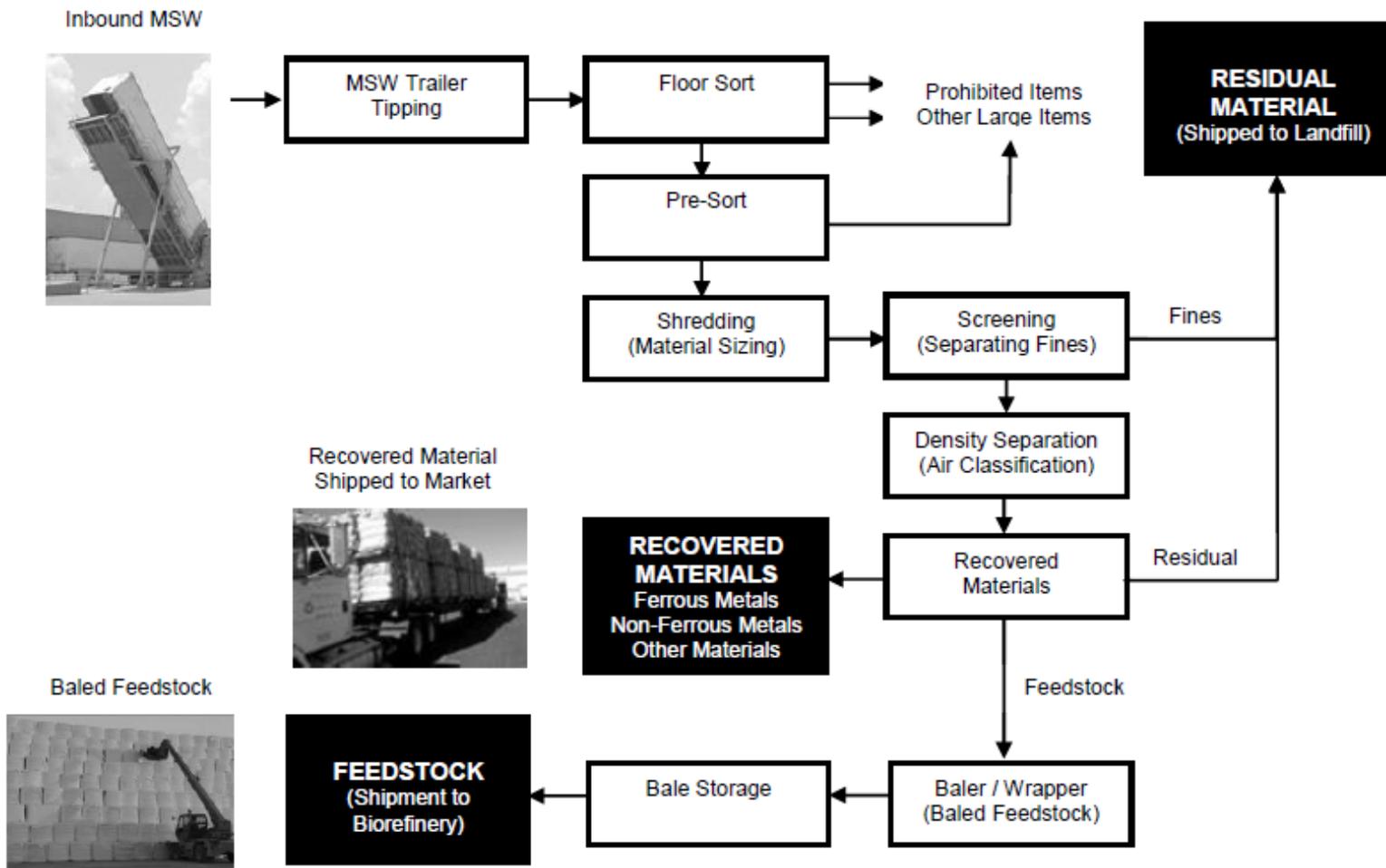


Figure 2-3 Feedstock Processing Facility - Process Flow Diagram MSW Processing System

Manual sorting would be conducted on the presorting line to remove large items from the inbound MSW. Such items as cardboard, large metal pieces, hazardous waste, and other items would be removed from the materials before shredding.

Shredding, Screening, and Density Separation

The sorted MSW would be shredded to a reduced size form and screens after shredding would be used to remove the fines. Sized MSW would then be conveyed through separation equipment to separate the lighter organic materials from the heavier inert materials, which would be baled and wrapped as feedstock.

Recovered Materials

At various times, plastics may be subject to recovery to limit such volumes in the organic materials and would then be baled for shipment to market. Use of magnetic separators to remove ferrous metals and eddy current separators to remove the non-ferrous materials would be used to sort metals from the MSW. Metals would be shipped to market.

Dust Control

The MSW processing building would be equipped with a system to minimize dust and reduce housekeeping. The dust suppression system (with dust extraction pick-up at the MSW sizing, separation, and belt conveyor material transfer points) would capture dust, which would be collected for transport to the landfill.

Baling and Wrapping

The feedstock bales would be wrapped with a polyethylene film for storage of the feedstock. The baled feedstock, weighing approximately 3,000 pounds per bale, would then be loaded onto flatbed trailers for transport to the Biorefinery.

Residual Material Loading and Landfilling

Residual Material not used as feedstock or recovered for recycling (concrete, asphalt, fines, etc.) would be transported to the landfill. A truck loading conveyor would be incorporated into the design to load and distribute residual material into transfer trailers for shipment to the landfill.

Water Supply

Water for the Feedstock Processing Facility domestic and fire suppression supply would be supplied by the Canyon General Improvement District (CGID). The CGID has been created to provide customers in the community of Lockwood, Storey County, Nevada with water, wastewater, trash removal, television, and streets and storm drains services. CGID's water resources come from groundwater approved by existing state permits and pumped from groundwater wells.

The Feedstock Processing Facility would not use water in the MSW processing system. The CGID has represented that it has sufficient potable water and has issued a "will serve" letter to Sierra BioFuels. Approximately 13,000 linear feet of 3-inch high-density poly polyethylene (HDPE) water line would be installed in the Storey County ROW along Canyon Road for an interconnection to the CGID potable water system. For domestic water and fire suppression use, CGID would provide the Feedstock Processing Facility with approximately 30 gpm of potable water at 158 psi, to be stored on-site in a 660,000-gallon above ground tank. A diesel fire water pump would provide the fire protection system with a minimum fire water flow to the hydrants of 3,000 gpm for 3 hours.

Labor and Operation Hours

The Feedstock Processing Facility would be designed to operate a maximum of 24 hours per day, 7 days per week, 365 days per year. The total number of employees and shift schedules are being developed as the design progresses and would be finalized when construction is completed. It is anticipated that the Feedstock Processing Facility would operate consistent with the Landfill Regional Landfill's operating hours. Approximately 42 full time employees would be required to staff the operations. Roles and responsibilities of the Feedstock Processing Facility's key personnel are provided in **Table 2-7** below. Facility attendants would be on-site during each shift, with on-site management personnel provided for all site operations associated with the Feedstock Processing Facility. The level of employment would be established by the basic business volume and would be sufficient to comply with the requirements of the relevant NDEP rules and regulations, and any requirements established in the Feedstock Processing Facility's NDEP-BWM Solid Waste permit. Operations personnel would attend training classes in health and safety, environmental compliance, operations, maintenance, and equipment process safety.

Table 2-7 Feedstock Processing Facility – Staff Roles and Responsibilities

Position	Roles and Responsibilities
Feedstock Processing Facility Manager	During EP&C Phase:
	<ul style="list-style-type: none"> • Represent Operator in detailed technical, operation, and maintenance matters. • Assist in development of policies and procedures for training during commissioning, start-up, and eventual operations.
Foreman / Processing Shift Supervisor	During the Operational Phase:
	<ul style="list-style-type: none"> • Responsible for the daily supervision of all O&M personnel. • Oversight to ensure a safe, environmentally responsible, and economical operations. • Responsible for annual O&M Plan, budget and monitoring performance. • Oversee development and upkeep of an Operating Management System. • Direct preparation and revisions to O&M policies and procedures, including personnel training and development. • Interface with the community and government agencies as needed for the proper operation of Project.
	During EP&C Phase:
<ul style="list-style-type: none"> • Oversee preparation of operating manuals. • Participate in recruitment and hiring of the O&M staff and manage subsequent training in preparation of commission and operation. • Assist the Construction contractor with start-up activities. 	
During the Operational Phase:	
<ul style="list-style-type: none"> • Manage operations personnel in providing a safe, environmentally sound and cost-efficient operations. • Work with the Feedstock Processing Facility Manager to ensure Project is maintained in proper working order. 	

Table 2-7 Feedstock Processing Facility – Staff Roles and Responsibilities

Position	Roles and Responsibilities
Scale House Operator	<p>During the Operational Phase:</p> <ul style="list-style-type: none"> <li>• Responsible for weighing and maintaining records of vehicles entering and leaving the facility. <li>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes. <li>• Provide general directions and information to incoming vehicles.
Equipment Operators	<p>During the Operational Phase:</p> <ul style="list-style-type: none"> <li>• Responsible for handling, moving, loading and unloading of material throughout the facility. <li>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes. <li>• Coordinate actions with supervisors and management.
Sorters / Quality Control Staff	<p>During the Operational Phase:</p> <ul style="list-style-type: none"> <li>• Responsible for sorting materials based on instructions and outlined procedures for each station. <li>• Would be trained in site safety procedures, recordkeeping requirements, and to visually check for prohibited wastes. <li>• Coordinate actions with supervisors and management.

Facility Security

Public access would be controlled to minimize unauthorized vehicular traffic and public exposure to MSW processing operations associated with the Feedstock Processing Facility. There would only be one entrance to the Lockwood Regional Landfill via a private road. The Lockwood Regional Landfill's scalehouse is staffed and secured by plant personnel during hours of operation. The Feedstock Processing Facility would have one ingress and egress road, each controlled by a gate. All vehicles would be required to pass through the landfill gate before entrance into the Feedstock Processing Facility. Only vehicles authorized by the Operation's staff would be allowed to have access beyond the Feedstock Processing Facility's parking lot area servicing the administration building. Signage and/or on-site personnel would provide directions to the unloading and loading areas.

Fire Protection

The SCFD provides firefighters and emergency response personnel as first responders to an accident, emergency, and other incidents requiring medical attention.

As a condition of the Feedstock Processing Facility's NDEP-BWM Solid Waste Operating Permit, an ERP must be submitted to the Storey County Public Works, SCFD, and NDEP-BWM for approval prior to operation of the Feedstock Processing Facility. In addition, a Fire and Life Safety Plan must be submitted to the SCFD prior to the issuance of building permits.

The ERP and Fire and Life Safety Plan would be incorporated into the SOP, to ensure the operation of the Feedstock Processing Facility includes measures to protect human life, property and minimize any environmental effect. The following steps would be taken regularly at the Feedstock Processing Facility by designated personnel to prevent fires:

- Operators would be alert for signs of burning waste such as smoke, steam, or heat being released from inbound MSW loads.
- Equipment used to move waste would be routinely cleaned through the use of a high pressure air system. The high pressure air would remove dust and loose materials that can cause equipment overheating and increase fire potential.
- Smoking would not be permitted within the Feedstock Processing Facility. Smoking would be permitted in designated smoking areas only.

Staff would take the following steps if a fire is discovered:

- Contact the SCFD by calling 911. The SCFD has the equipment and other assets that can respond rapidly to fires at the site.
- Alert other facility personnel.
- Assess extent of fire, possibilities for the fire to spread, and alternatives for extinguishing the fire.
- Attempt to contain or extinguish the fire before arrival of the SCFD if it appears that the fire can be safely fought with available firefighting devices.
- Would not attempt to fight the fire alone. Would not attempt to fight the fire without adequate personal protective equipment. Would be familiar with the use and limitations of firefighting equipment available on-site.
- Upon arrival of the SCFD personnel, direct them to the fire and provide assistance as appropriate.

Methods for fighting fires would be determined based on the type of fire discovered:

- Firefighting methods for burning MSW include smothering the MSW with a loader bucket or separating the burning material from other MSW. Small fires also can be controlled with hand-held extinguishers. If a fire occurs on a vehicle or piece of equipment, the equipment operator would attempt to bring the vehicle or equipment to a safe stop. If safety of personnel would allow, the vehicle would be parked away from MSW supplies and other vehicles. The engine would be shut off and the brake engaged to prevent movement of the vehicle or piece of equipment. The MSW processing building would be equipped with early suppression first response (ESFR) sprinkler system. The ESFR sprinkler system would be located in the ceiling structure to allow rapid discharge of a large quantity of water in very efficient discharge patterns to suppress and extinguish a fire quickly, not just control a fire in its early stages, resulting in less water damage.

The Feedstock Processing Facility would be equipped with various types of fire suppression equipment. Fire extinguishers would be maintained on all transportation vehicles entering the Feedstock Processing Facility and on operation equipment in the enclosed MSW processing building. All fire suppression equipment would be fully charged and ready for use. Inspection and recharging would be performed following each use. The fire suppression equipment would be inspected on a regular basis as detailed below. A qualified service company would inspect, update all extinguishers inspection tags, and keep records of equipment inspected (including but not limited to: equipment, date of inspection, and name of inspector). The intervals for inspection would be as follows:

- *Portable Fire Extinguishers.* Weekly visual inspection, annual inspection, and certification by an approved service company.
- *Hose Stations.* Weekly visual inspection, annual inspection, and certification by an approved service company.

- *Automatic Sprinkler Systems.* Annual inspection and certification by an approved agency or service provider.
- *Emergency Firewater Pump.* Weekly testing.

Training of on-site personnel in firefighting techniques, fire prevention, response, and the fire protection aspects of the SOP would be provided by established professionals as part of initial employee training and on an annual basis. Personnel would be familiar with the use and limitations of firefighting equipment available on-site. Records of this training would be included in the operating record for the Feedstock Processing Facility. When the detailed design of the Feedstock Processing Facility has been completed, Sierra BioFuels will review requirements under all applicable federal, state and local regulations, including those under EPCRA, and amend the Feedstock Processing Facility's SOP, as necessary.

Industrial Materials

Industrial materials used or produced by the Feedstock Processing Facility and the storage methods and quantities stored on site are shown in **Table 2-8** below. Initial industrial supplies would be purchased based upon usage recommendations from the equipment suppliers. The Feedstock Processing Facility would purchase and store these materials in bulk. These materials would be stored, handled and used in accordance with all applicable local, state and federal regulations. The expected industrial supplies at the facility include (collectively "**Industrial Supplies**"):

- *Lube Oil:* Lube oil would be supplied in drums and used in process equipment.
- *Neutralizing Additive:* Neutralizing additive would be stored in drums and used in the odor control systems.
- *Diesel Fuel:* Diesel fuel would be consumed by the Feedstock Processing Facility's rolling stock equipment. The diesel fuel would be stored in an above-ground storage tank.
- *Propane Tanks:* Propane would be consumed by the Feedstock Processing Facility's forklift equipment. The propane tanks would be stored in racks for exchange and refill by an outside propane contractor.

Domestic Waste

The Feedstock Processing Facility's domestic waste (e.g., waste from the offices, kitchen and trash cans) would be comingled with the inbound MSW on the tipping floor and processed through the feedstock processing system.

Table 2-8 Industrial Materials at Feedstock Processing Facility

Reference No.	Inventory Item	Quantity ¹	Type of Container
Primary Materials			
1	MSW	1,200 Tons	Processing Building/ Transfer Trailers
2	Feedstock	2,669	Bales
Secondary Materials			
3	Recovered Material		
(3-a)	Cardboard	45 Tons	Bales
(3-b)	Plastics	45 Tons	Movable Container
(3-c)	Ferrous Metal	45 Tons	Movable Container

Table 2-8 Industrial Materials at Feedstock Processing Facility

Reference No.	Inventory Item	Quantity ¹	Type of Container
(3-d)	Non-Ferrous Metals	45 Tons	Bales/Movable Container
4	Residual Materials	420 Tons	Transfer Trailers
Industrial Supplies			
5	Lube Oil	10	Drum
6	Diesel	2,500 Gallons	(Aboveground Tank)
7	Neutralizing Additive	110 Gallons	Drums
8	Propane Tanks	20	Portable Tanks

¹ Data represent maximum quantities. Actual stored quantities would be equal or less than these quantities.

Wastewater Management

Sanitary Wastewater

The primary source of sanitary wastewater would be the restrooms and kitchen areas of the Feedstock Processing Facility. Sanitary wastewater usually contains pathogenic microorganisms that dwell in the human intestinal tract. It also contains nutrients, which can stimulate the growth of aquatic plants and organic compounds that can produce malodorous gasses. All sanitary wastewater generated at the Feedstock Processing Facility would be discharged to an on-site sewage disposal system designed and installed under a permit issued by the NDEP – BWPC.

Storm Water

Federal law prohibits the introduction of storm water into sanitary sewerage systems. Roof drains, yard drains, and other surface water drains that manage only precipitation runoff would be routed to the storm water retention system designed to retain runoff water equivalent to a 100-year storm. The Feedstock Processing Facility's storm water drainage system has been designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

Two separate submittals are required for the regulation of storm water. Prior to the commencement of construction, the Sierra BioFuels would be required to submit a NOI to the NDEP BWPC for coverage under the State of Nevada's Storm Water General Permit NVR100000 for storm water discharges associated with large construction activities. A SWPPP would be completed and maintained on-site. Prior to the commencement of operation, the Sierra BioFuels also would submit a NOI to the NDEP, for coverage under the State of Nevada's General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit NVR050000). Sierra BioFuels would be required to have a SWPPP completed and maintained on-site in order to operate the Feedstock Processing Facility.

Spill Control

All employees would be trained to respond to spills or leaks from tanks, vehicles, and equipment. Steps to be taken should a spill occur would include:

- Stop processing, loading and/or unloading, and halt vehicle movement, as necessary;
- Secure the area;
- Identify the source;
- Notify the supervisor/manager;

- Properly clean up the affected area; and
- Document the incident.

Clean-up/spill response equipment would be placed in designated areas and clearly marked. Spill response equipment would include:

- Absorbent materials;
- Shovels, brooms; and
- Personal protection equipment (e.g., coveralls, gloves, glasses, etc.).

The Feedstock Processing Facility would have an aboveground storage tank that would be maintained and inspected in accordance with federal, state and local regulations. For aboveground tank, the operation's personnel would:

- Conduct regular inspections to detect leaks and spills;
- Verify sound condition of containment structures;
- Label storage tanks with product name and potential health or safety hazards;
- Ensure that the secondary containment structure holds at least 110 percent of the largest tank's capacity;
- Use spill and overfill protection when fueling vehicles;
- Not allow unattended fueling;
- Install safe-guards to prevent vehicles' wash water from mixing with storm water;
- Clean up leaks and spills immediately; and
- Not allow process water and storm water to mix.

Environmental Control Design and Process Features

The design of the Feedstock Processing Facility incorporates process features that would minimize environmental impacts as discussed below.

Dust Control

Primary access roads are paved and on-site roadways would be paved, considerably reducing the potential for dust generation resulting from mud and dirt being tracked onto the roadway network. On-site roadways would be swept as necessary to minimize dust generation at the Feedstock Processing Facility.

Odor Control

The Feedstock Processing Facility would control odor so that there would be no obnoxious odors causing a nuisance to adjacent properties. The Feedstock Processing Facility would be equipped with a mist odor control system on the ceiling throughout the buildings and at ingress and egress points. Operations personnel would have the capability to adjust the type of neutralizing additive used in the system based on actual conditions and constituents that may be causing odors. Mist odor control systems, which spray a water solution of odor masking or neutralizing compounds, provide one of the most effective methods for the treatment of odors associated with MSW. Depending on the type of odor being controlled, such systems can utilize either: 1) masking agents or chemical counteractants to block odor sensing, or 2) odor absorbing agents or biological compounds that alter the decomposing process and prevent odors from being generated by increasing the population of aerobic microbes and preventing anaerobic conditions.

Vector Control

Vectors such as rodents, flies, and mosquitoes would be controlled by proper daily facility operations and housekeeping practices such as cleaning up spills, maintaining roadways, and washing of equipment. Insect and rodent bait would be used to control populations of these vectors. If necessary, a licensed professional would apply pesticides for control of vectors to ensure that proper chemicals are used and applied.

Windblown Material Control

Windblown material and litter at the Feedstock Processing Facility would be controlled through several methods, including proper unloading of the MSW, picking up litter, perimeter fences, and landscaping. Adequate staffing would be in place to ensure that these measures are taken. Personnel would police the Feedstock Processing Facility, including perimeter fences, access roads, and the entrance gate, every operating day to pick up and return any windblown material and litter to the facilities and perform other litter control measures, as necessary.

During transport, the Operator would take steps to ensure that transfer trucks delivering feedstock to the Biorefinery would be secure in order to prevent the escape of any part of the load during transport. The Operator also would take actions such as posting signs regarding covering of loads, assessing surcharges for any uncovered loads, reporting offenders to proper law enforcement officers, or similar measures. On days when the facilities would be in operation, the Operator would be responsible for cleanup of any feedstock spilled along and within the ROW of public access roads serving the Biorefinery. Maintenance activities would include a once per day cleanup of spilled feedstock materials.

Wildlife Nuisance Control

Sierra BioFuels would work with NDOW on wildlife attraction nuisance issues if wildlife nuisance becomes an issue at the site of the Feedstock Processing Facility. Feedstock Processing Facility personnel would monitor the grounds for wildlife mortalities during construction and operation. Any wildlife mortalities would be reported to NDOW annually.

2.2.2.5 Decommissioning

A Closure Plan has been prepared for the Feedstock Processing Facility pursuant to Section 4 of the NDEP - BWM's guidance document for the permitting of "Material Recovery Facilities" under **NAC 444.74747**. Should it be necessary to close the Feedstock Processing Facility, the following steps would be taken:

- When determined that the Feedstock Processing Facility would no longer be needed or ceases operations, a written notice would be filed with the NDEP-BWM and the Storey County Planning Department 180 days prior to the date of closure.
- Within 30 days after delivering the last load of feedstock, the site would be cleared of all remaining solid waste, processing residue, litter, recovered materials, and inoperable equipment in accordance with the Closure Plan, with the exception of putrescible waste, which shall be removed within 72 hours of receipt.
- The site would be secured (i.e., padlocks on the access gates and all the doors of the buildings would be locked).
- All remaining feedstock stored, and/or processed at the facility would be transferred to an authorized disposal facility.
- All wastes and waste residues would be removed from the site and transferred to an authorized disposal facility and/or material dealer.

- Mobile equipment (e.g., transfer trailers, wheel loaders, forklifts, etc.) would be moved to another site, sold, scrapped, or otherwise disposed of building components (e.g., lights, electrical systems, doors, etc.) would be left in place for future uses and to keep the building secure.
- Operating records would be transferred to the Feedstock Processing Facility Owner's office and maintained consistent with NDEP regulations.
- General cleanup of the processing building, storage building, and handling system (i.e., disinfect and wash down the tipping floor, conveyors, cleanout of sumps and drains, etc.) would be performed.
- General cleanup of the site and buildings would be performed.
- A closure certification would be prepared by a registered professional engineer and submitted to the NDEP- BWM for approval that the Feedstock Processing Facility has been closed in accordance with the approved Closure Plan.

Upon determination that the Feedstock Processing Facility would cease operation, a notice would be filed with the NDEP- BWM and the Storey County Planning Department that would outline the schedule for closure of the Feedstock Processing Facility. The anticipated schedule and steps to be taken to close the Feedstock Processing Facility are as follows:

- No later than 180 days prior to initiation of closure activities of the Feedstock Processing Facility, Sierra BioFuels would provide written notification to the NDEP- BWM and the Storey County Planning Department of the intent to close the Feedstock Processing Facility.
- Barriers or gates would be installed at access points following the closure date to prevent unauthorized entry into the Feedstock Processing Facility. Padlocks would be installed on the gates and the building doors would be locked or padlocked.
- Closure activities at the Feedstock Processing Facility would be completed (as described above) within 180 days following the initiation of closure activities.
- Within 10 days after completion of closure activities, a documented certification, signed by an independent registered professional engineer, would be submitted to the NDEP and the Storey County Planning Department. This certification would verify that final closure has been completed in accordance with this Closure Plan. This certification would include all applicable documentation necessary for certification of closure. Once approved, this certification would be placed in the Feedstock Processing Facility's operating record.

Since all materials would be removed from the site, there would be no requirement for a post-closure period. As such, consistent with the NDEP- BWM rules, as part of the closure certification, the Feedstock Processing Facility would request the NDEP- BWM confirmation that a post-closure period would not be needed. This request would include a documented certification by an independent professional engineer verifying that post-closure care maintenance would not be necessary in view of the closure procedures (e.g., removal of all materials from the site and the other closure steps as noted above) being implemented. In any event, the Feedstock Processing Facility would retain the right of entry and maintain all ROWs for the closed facility for a period of at least 5 years after completion of closure unless the Feedstock Processing Facility would be put to some other use or divested to a third-party.

2.2.2.6 Permits, Approvals, and Authorizations

A status of permitting, approvals and authorizations associated with the Feedstock Processing Facility is provided in **Table 1-2**.

2.3 No Action Alternative

Under the No Action Alternative, the DoD would not down-select Sierra BioFuels to continue on to Phase 2 of the ADBPP for construction of the IBPE. In this scenario, the DoD assumes, for purposes of this EA, that the IBPE would not proceed as scheduled without the Proposed Action, as the IBPE's viability would remain uncertain. Although construction and operation of a MSW-to-renewable fuel facility might be possible at the sites near the communities of Lockwood and McCarran in Storey County, Nevada as identified in this EA with alternative means of financing, that scenario would not be analyzed because it would not provide for a meaningful No Action Alternative, as it would be identical to the Proposed Action and, as a result, it would be assumed that the IBPE would not be built or operated.

It would always be possible, and may be likely, that non-federally funded development would result in similar development and environmental impacts to the sites as documented. The TRI Center is actively seeking tenants to construct industrial or commercial facilities on its property, and will continue to do so in the event Sierra BioFuels does not construct the IBPE.

2.4 Site Selection History

Alternate sites were considered and eliminated by Sierra BioFuels as a part of the initial site selection process that occurred prior to the DoD establishing the opportunity for grant funding under the ADBPP for which this EA is being prepared. As such, a reevaluation of alternate sites was not conducted as a part of this assessment. A brief review of the history of the selection of the sites for development of the IBPE is provided below.

In 2007, Sierra BioFuels acquired the development rights to a biomass-to-ethanol project from IMS Nevada LLC who had purchased property in the TRI Center. This site was eliminated from consideration for development because it was too small to accommodate the Biorefinery equipment layout and operational criteria. In 2009, another parcel was located across the street for the development of the Biorefinery. The location of this alternate site continues to be well suited to an industrial park with existing zoning for heavy industrial use, established infrastructure, and avoidance of any known sensitive human or environmental receptors. No other industrial area in the region was available for consideration for the Biorefinery, and it was not evident that any other industrial development area could offer a location with improved (reduced) environmental or human impact.

Initially, Sierra BioFuels considered siting the Feedstock Processing Facility adjacent to the Biorefinery on a parcel located in the TRI Center, as an alternative site. After reviewing the options, locating the Feedstock Processing Facility adjacent to the Lockwood Regional Landfill was better suited to reduce regulatory, operational and logistical impacts.

Locating the Feedstock Processing Facility in the TRI Center would have required the re-routing of the 64 inbound MSW trucks per day (see **Table 2-6**). By locating adjacent to the landfill, the inbound MSW would be diverted from the landfill to the Feedstock Processing Facility after crossing the landfill scale. Materials that would not be suitable for feedstock would be transported to the landfill. The sorted and prepared feedstock would be baled and wrapped in plastic to avoid any losses during transfer to the Biorefinery. The location for the Feedstock Processing Facility avoids any additional environmental impact for the non-feedstock stream, and it minimizes the amount of material and haul distance to the Biorefinery, thereby minimizing any impact on the natural or human environment. No other site that is not adjacent to the landfill offers comparable or improved environmental and economic advantages to the enterprise as the proposed site.

2.5 Summary of Environmental Impacts

The anticipated effects of the Biorefinery and Feedstock Processing Facility are summarized in **Table 2-9**. Detail regarding the environmental effects is discussed in Chapter 3.0.

Table 2-9 Summary of Anticipated Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Land Use and Special Management Areas	No effect	Anticipated land use and land ownership would remain unchanged. No special management areas are within the vicinity of the Biorefinery site or the Feedstock Processing site.	3.2
Transportation Corridors, Infrastructure, and Utilities	Minimal effect	Minimal increases in vehicle trips on existing roads, railways, infrastructure, and utilities designed and upgraded to accommodate heavy industrial uses.	3.3, 3.4
Surface Water	No effect	No potential for effects to surface water. Storm water to evaporation pond, irrigation, etc.	3.5
Floodplains	No effect	The sites are not located in a flood zone or floodplain.	3.5
Wetlands	No effect	There are no federally designated wetlands located on or in the vicinity of the sites.	3.5
Groundwater	Negligible effect, permit required	The potential to contaminate groundwater would be negligible. Storm water and groundwater discharge permits required. No direct discharge to groundwater; permit is for retention basin.	3.5
Geology and Soils	No effect	No potential for impact to geology and soils at the sites.	3.7
Vegetation	Minimal effect	Removal of 33.8 acres of sagebrush vegetation and understory grasses in partially disturbed areas planned for industrial development.	3.8
Wildlife and Fisheries	Minimal effect, protective measures	Removal of 33.8 acres of wildlife habitat and displacement of wildlife in partially disturbed areas planned for heavy industrial development. Protective measures that limit habitat removal during migratory periods would be implemented.	3.9
Special Status Species	Minimal effect, protective measures	No impacts to federally listed endangered species. No impacts to state listed or sensitive plant species. Minimal effects to state listed mammals and bird species from removal of 33.8 acres of habitat in partially disturbed areas planned for heavy industrial development. Protective measures that limit habitat removal during migratory periods would be implemented.	3.10
Air Quality	Minimal effect, permit required	Impacts of emissions would not cause or contribute to an exceedence of an ambient air quality standard. Air quality "Operating Permit To Construct" (Permit No. AP 2869-3306) was issued July 1, 2013 for the Biorefinery.	3.11

Table 2-9 Summary of Anticipated Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Cultural Resources	No adverse effect	Previous State Historic Preservation Officer (SHPO) consultation completed on February 14, 2011 on the Biorefinery site. No known cultural resources are on the site. December 2013 Class I files search survey done on Feedstock Processing Facility site and no known cultural resources are on site. SHPO concurred with DoD's determination of No Historic Properties Affected on January 15, 2014 for the Feedstock Processing Facility site. If undiscovered cultural resources are found during construction, work would cease pending consultation with a Tribes and SHPO.	3.12
Socioeconomics Impacts and Environmental Justice	Minimal effect	No adverse effects are anticipated to existing communities or populations. The addition of up to 74 full-time jobs would benefit nearby communities.	3.13
Visual Resources	Minimal effect	Introduction of visual elements would be similar to other industrial developments at the TRI Center and in adjacent industrial areas.	3.14
Noise and Odor	Minimal effect	Introduction of noise would be similar to other industrial developments at the TRI Center and adjacent industrial areas. Additionally, measures would be taken to inhibit the propagation of odors within the TRI Center and adjacent industrial areas.	3.15
Public Health and Safety	No effect	While a potential for spills and fire would exist at the facilities because of the nature of the operations, no effects from routine operations or accidents are anticipated from the facilities due to its remoteness from population centers and emergency preparedness measures.	3.16

3.0 Affected Environment and Environmental Effects

3.1 General Site Descriptions

3.1.1 Biorefinery

The Biorefinery would be located in the TRI Center, a 107,000-acre industrial park located approximately 20 miles east of Reno, Nevada, that was established in 1999. The TRI Center, a portion of the former Asamera Ranch, is private land owned by Tahoe-Reno Industrial Center, LLC (TRI Center, LLC), comprising approximately 63 percent of the land area of Storey County. The TRI Center currently consists of approximately 6,000 acres zoned for industrial use, and may expand in the future, subject to Storey County approval. The entire 107,000 acres of the TRI Center is zoned “I-2 Heavy Industrial” under the Storey County Zoning Ordinance, which allows almost all types of industrial and commercial uses. Development at the TRI Center is guided by a development agreement between the master developers and the county, which incorporates the Development Handbook (TRI Owners Association 2000) and the Storey County Zoning Ordinance.

In July 2009, Sierra BioFuels secured the an initial 16.77 acres for the Biorefinery across the street from the original location. Subsequently, Sierra BioFuels entered into a Purchase and Sale Agreement for an additional 2.6 acres (the “Additional Property”) adjacent to the site to accommodate the current layout of the Biorefinery. In 2011, approximately 16.77 acres of the parcel adjacent to Peru Drive was cleared, excavated and graded. The site also was disturbed through road and other infrastructure improvements prior to the purchase of the property. The Biorefinery site is a 19.4-acre parcel that currently contains a concrete foundation for a fire water pump. **Figure 3-1** provides a location map for the Biorefinery. Photographs of the Biorefinery site are provided in **Figure 3-2** and **Figure 3-3**.

3.1.2 Feedstock Processing Facility

The Feedstock Processing Facility would be located in an industrial area (Lockwood Landfill Industrial Area) near Lockwood, Storey County, in the northwest corner of Section 22, T19N, R22E. It is approximately 8 miles east of Reno, approximately 1.5 miles southeast of the small community of Lockwood, Nevada, and 15 roadway miles west of the Biorefinery. The route between the Feedstock Processing Facility and the Biorefinery is comprised of existing roadway constructed to carry traffic associated with I-2 Heavy Industrial zoning and interstate highway. The approximate 14.4-acre parcel is located in a mountainous area within the northern limits of the Virginia Range and approximately 1 mile south of the Truckee River. Lagomarsino Canyon and Long Valley Creek are located west of the property. The land immediately surrounding the property is owned by Refuse Inc. The site is located adjacent to the Lockwood Regional Landfill scalehouse, north of Mustang Road. **Figure 3-1** provides a location map for the Feedstock Processing Facility.

The Lockwood Landfill Industrial Area consists of approximately 2,200 acres zoned “I-2 Heavy Industrial” under the Storey County Zoning Ordinance (Codes §§17.37.050 to 17.37.080), which allows almost all types of industrial and commercial uses. The Feedstock Processing Facility would be an “Allowed Use” in the “I-2 Heavy Industrial” zone as it functions similar to a “Solid Waste Recycle Center.” A photograph of the Feedstock Processing Facility site, viewed from the southwest corner of the property, across Mustang Road, is shown in **Figure 3-4**.

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	Biorefinery Facility
	Feedstock Processing Facility
	Proposed Potable Water Line
	Project Road
	County Boundary

**Fulcrum Sierra Biofuels, LLC
Project Sierra**

Figure 3-1
Site Location

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

1:100,000

AECOM		PHOTOGRAPHIC LOG	
Client Name: Fulcrum BioEnergy, Inc.		Site Location: 16.77-acre parcel located at 3600 Peru Drive, McCarran, Storey County, Nevada	Project No. 12774-003-210
Photo No. 1	Date: 12/2/08		
Direction Photo Taken: Facing northwest			
Description: Subject Site			
Photo No. 2	Date: 12/2/08		
Direction Photo Taken: Facing west			
Description: Subject Site stormwater culvert			

Figure 3-2 Photographs of the Biorefinery Site

AECOM		PHOTOGRAPHIC LOG	
Client Name: Fulcrum BioEnergy, Inc.		Site Location: 16.77-acre parcel located at 3600 Peru Drive, McCarran, Storey County, Nevada	Project No. 12774-003-210
Photo No. 3	Date: 12/2/08		
Direction Photo Taken: Facing west			
Description: Subject Site dirt access road			
Photo No. 4	Date: 12/2/08		
Direction Photo Taken: Facing north			
Description: Subject Site graded area			

Figure 3-3 Photographs of the Biorefinery Site



* From southwest corner, across Mustang Road

Figure 3-4 Photograph of the Feedstock Processing Facility Site*

The following subsections provide a description of the IBPE, comprised of the Biorefinery and the Feedstock Processing Facility, locations and associated resources and the potential environmental effects associated with construction and operation of the IBPE. Required permits and design and process measures are identified, where necessary, that could reduce or eliminate potential adverse effects on the environment.

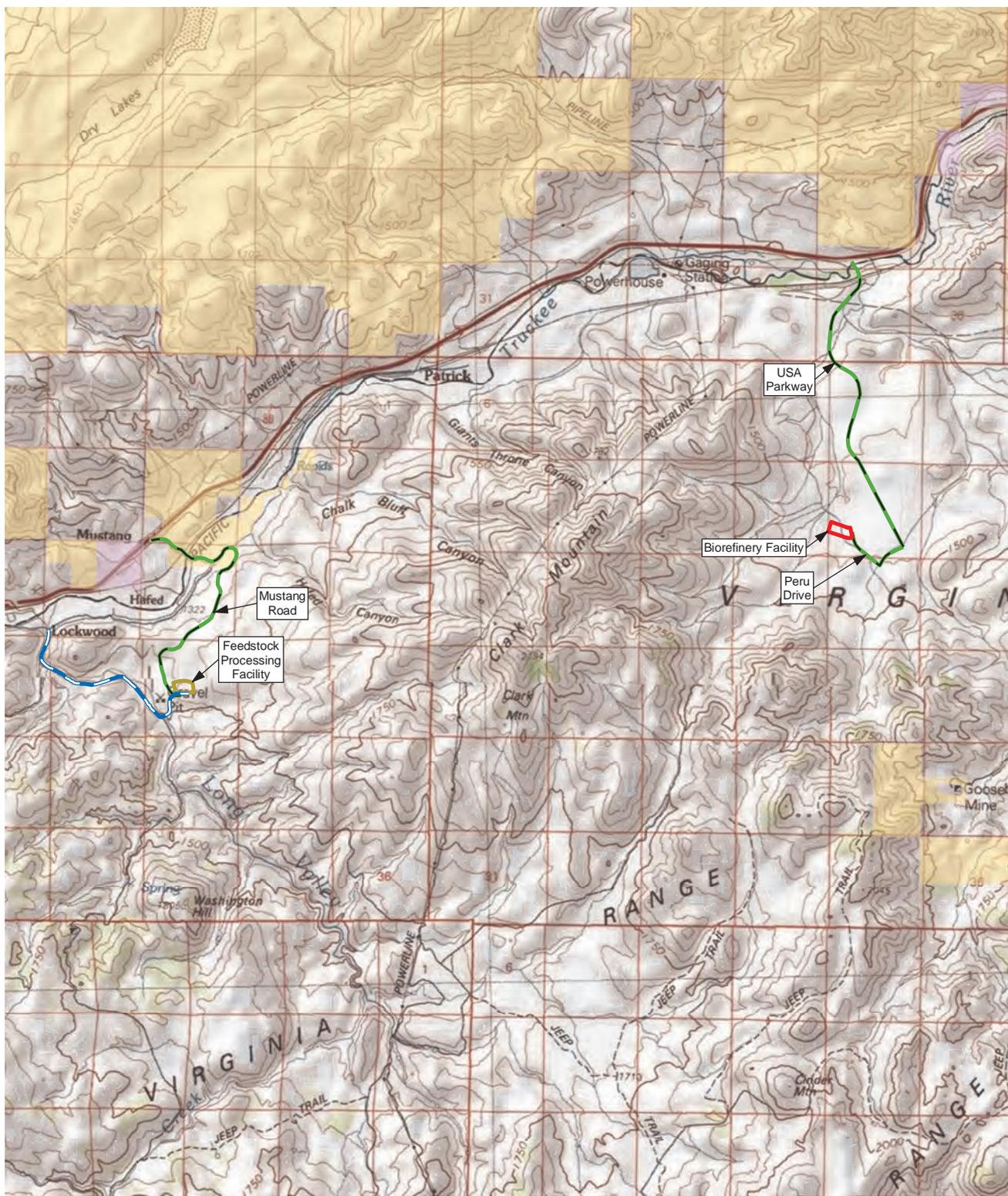
3.2 Land Use

3.2.1 Affected Environment

Biorefinery

The Biorefinery site and adjacent properties are privately owned by the TRI Center, LLC. Sierra BioFuels and the TRI Center, LLC, entered into a Purchase and Sale Agreement on December 23, 2008, for the purchase of the site and closed on the property on July 2, 2009. In February 2013, Sierra BioFuels and TRI Center, LLC entered into a Purchase and Sale Agreement for the Additional Property to accommodate the current layout of the Biorefinery. The nearest federal land is managed by the Bureau of Land Management (BLM), approximately 2 miles to the north and to the south. There are no state-, county-, or city-owned lands in the area. **Figure 3-5** depicts land ownership in the area.

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- Biorefinery Facility
- Feedstock Processing Facility
- Project Road
- Proposed Potable Water Line

- Land Ownership**
- Bureau of Land Management
 - Bureau of Reclamation
 - Private

**Fulcrum Sierra Biofuels, LLC
Project Sierra**

Figure 3-5
Land Ownership



The TRI Center is a portion of the former Asamera Ranch, a 107,000-acre tract of private land owned by one of the project master developers, TRI Center, LLC. The TRI Center area comprises approximately 63 percent of the land area of Storey County, a sparsely populated rural Nevada county of 264 square miles. Storey County is the smallest county in Nevada by land area. According to the Storey County Economic Development Department (<http://www.storeycounty.org/economic/demographics.asp>), the county population was 4,384 in 2008. Its small population is primarily centered in the Virginia City area, 25 miles southwest of the Biorefinery site, which is not connected to the TRI Center by paved roads. The TRI Center, located in the unincorporated portion of the county, is intended to be a mixed-use, nonresidential development, consisting of a wide range of industrial, office, and commercial businesses. Since the TRI Center property was purchased for development in 1998, a bridge over the Truckee River, a diamond interchange on I-80, 10 miles of a four-lane freeway, and 100 miles of roads throughout the park have been built. The self-sufficient center has its own fiber-optic cable service, water, and high-pressure natural gas pipeline.

The TRI Center has the capacity of 100-million-square-foot of industrial space. Companies already at the TRI Center include Kal Kan Pet Foods; APL Logistics, distributors of Dell Computers; Alcoa; James Hardie; Royal Sierra Extrusions; Golden Gate Petroleum; a Wal-Mart distribution center; Trans Western Polymers; and Frank-Lin rectifiers. Three power plants also are located at the TRI Center: NV Energy, Inc. (NVE) (formerly Sierra Pacific Power); Barrick Mines; and Naniwa (a power plant that provides additional power support during peak hours). Currently, the closest developed property to the site is an auto auction facility located 0.3 mile to the west.

Development of the TRI Center is guided by a development agreement between the master developers and Storey County, which incorporates the Development Handbook (TRI Owners Association 2000) and the Storey County Zoning Ordinance (adopted July 1, 1999). The entire TRI Center property is zoned "I-2 Heavy Industrial Zone" under the Storey County Zoning Ordinance Codes §§17.37.050 to 17.37.080, which allows almost all types of industrial and commercial uses. The terms of the development agreement and the Storey County Zoning Ordinance allow maximum flexibility for land uses, but provide for a consistent, compatible development theme among the various land use possibilities in the actual facility siting.

Feedstock Processing Facility

The Feedstock Processing Facility site is located in the industrial area near the community of Lockwood in Storey County (Lockwood Landfill Industrial Area). The Feedstock Processing Facility site and adjacent properties are privately owned by Refuse, Inc. The nearest federal land is managed by the Bureau of Reclamation, approximately 1.5 miles in a direct line north of the site along the Truckee River Corridor. There are no state-, county-, or city-owned lands in the area. **Figure 3-5** depicts land ownership in the area.

The Feedstock Processing Facility site is located in a mountainous area within the northern limits of the Virginia Range and approximately 1 mile south of the Truckee River. Lagomarsino Canyon and Long Valley Creek are located west of the property. The land immediately surrounding the property is owned by Refuse Inc. The site is located in a high desert environment at an elevation of approximately 4,600 feet above mean sea level south of the Truckee River Corridor. The Lockwood Landfill Industrial Area consists of approximately 2,200 acres zoned "I-2 Heavy Industrial" under the Storey County Zoning Ordinance, which allows almost all types of industrial and commercial uses. The Feedstock Processing Facility would be an "Allowed Use" in the "I-2 Heavy Industrial" zone as it functions similar to a "Solid Waste Recycle Center." The nearest residence is in Lockwood which is approximately 1.5 miles in a direct line northwest from the planned location of the Feedstock Processing Facility.

Special Management Areas

There are no special management areas near either the Biorefinery site or the Feedstock Processing Facility site. The closest special management area is approximately 8 miles in a direct line west-

northwest of the Biorefinery site, the Pah Rah Basin Petroglyphs Area of Critical Environmental Concern located on BLM lands. The closest wilderness area is approximately 10 miles in a direct line west of the Feedstock Processing Facility site, the Mount Rose Wilderness Area, located on U.S. Forest Service lands.

3.2.2 Environmental Effects – Land Use

3.2.2.1 Proposed Action

No effects to land ownership, land use, or special management areas would be anticipated as a result of the Biorefinery or the Feedstock Processing Facility. The area would remain in private ownership and the land use associated with the two sites would be consistent with the “I-2 Heavy Industrial” Zone as defined by Storey County for the TRI Center and adjacent industrial lands. There are no special management areas in close proximity to the sites and therefore no effects would occur to these lands.

3.2.2.2 No Action Alternative

Without the IBPE, the area would remain in private ownership and the land use would continue to be consistent with the “I-2 Heavy Industrial” Zone as defined by Storey County for the TRI Center and adjacent industrial lands. Since the proposed sites are in industrial areas, it would be likely that other industrial uses would ultimately be considered for the sites.

3.3 Infrastructure and Utilities

3.3.1 Affected Environment

There are currently no utilities installed on either the Biorefinery site in the TRI Center (Phase I Environmental Site Assessment, 2013 [AECOM 2013]) or the Feedstock Processing Facility site in Lockwood, per the AECOM 2013 report and as verified by the Storey County Building Department. However, the TRI Center, as master developer of the industrial center, has installed utility infrastructure along Peru Drive that would serve the Biorefinery site; this utility infrastructure is adequate to support normal and customary service loads planned for typical industrial/commercial uses under the “I-2 Heavy Industrial” zoning classification.

Electrical Interconnection

The TRI Center is obligated to construct electrical infrastructure to support normal and customary service loads planned for typical industrial/commercial uses under the I-2 Heavy Industrial zoning classification. The electric interconnection to NVE’s existing electric distribution system would be in the Peru Drive alignment at 24.9 kV/600 amps on a utility pole located at the northeast corner of the Biorefinery site.

The Feedstock Processing Facility site is adjacent to NVE’s existing 24.9-kV electrical distribution system located in a utility easement on the southern side of Mustang Road adjacent to the Lockwood Regional Landfill scale house.

Natural Gas Interconnection

The TRI Center has installed a natural gas pipeline infrastructure to provide interconnection access to NVE’s distribution natural gas system throughout the TRI Center. The distribution system is sourced from the Tracey City Gate, operated by Tuscarora Pipeline. The Tuscarora Pipeline mainline is located approximately 4 miles north of the site, parallel to I-80. NVE’s natural gas distribution system interconnects with the mainline and operates between 90 and 235 pounds per square inch, gauge (psig). NVE has completed the installation of the natural gas distribution system in the Peru Drive alignment adjacent to the site. A marker for a natural gas pipeline is located across Peru Drive on the northern side of the railroad spur (Phase I Environmental Site Assessment, 2008 [AECOM 2008]).

The Feedstock Processing Facility would not require natural gas for the MSW processing system.

Storm Drainage

Major storm drainage improvements (i.e., flood channels and basins) are constructed by the TRI Center as development occurs at the TRI Center. The TRI Center storm drainage system has been design to contain a 100-year storm event.

Water and Sewer Service

As a private utility company, the TRIGID supplies community water and sewer service to occupants in the TRI Center. The water comes from groundwater approved by existing state permits and is pumped from wells on the TRI Center property. Additional wells, tanks, and distribution lines are constructed as development occurs. Sewage treatment is provided for TRI Center by a treatment plant within the TRI Center, and the effluent disposal system is designed for reuse in irrigation or industrial applications. The state approves all water and sewer facility designs, and Storey County has approved the TRI Center's operating rules and regulations, including connection fees and rates.

The CGID supplies community water to customers in the community of Lockwood. The water comes from groundwater approved by existing state permits. All sanitary wastewater generated at the Feedstock Processing Facility would be discharged to an on-site sewage disposal system designed and installed under a permit issued by the NDEP-BWP.

Other Utility Services

Telephone and cable TV (as well as power) are supplied from overhead lines to individual sites. Nevada Bell provides telephone service and the TCI Center supplies cable TV. A buried fiber cable warning sign was identified along the southeast boundary of the Biorefinery site (AECOM 2008).

3.3.2 Environmental Effects – Infrastructure and Utilities

3.3.2.1 Proposed Action

The TRI Center has already put in place the natural gas, storm drainage, water and sewer service, communications, and electrical infrastructure necessary to support the Biorefinery.

Electrical Interconnection

For construction power, the TRI Center would provide access to an electric interconnection at NVE's, existing electric distribution system in the Peru Drive alignment. During construction, a permanent interconnection would be made to the 24.9-kV distribution system. Sierra BioFuels would purchase any electricity required for the operation of the Biorefinery from NVE. To reduce interruption resulting from power outages, NVE would provide 3 levels of redundancy to the TRI Center, the looped distribution system, the substation transformer, and the mainline transmission feeder. No significant effects are anticipated as a result of Biorefinery's connections to this existing infrastructure.

For construction of the Feedstock Processing Facility, NVE would provide temporary construction power to a pole at the southwest corner of the site. During construction, a permanent interconnection would be made to the 24.9-kV distribution system. Sierra BioFuels would purchase any electricity required for the operation of the Feedstock Processing Facility from NVE. This electrical interconnection is shown in **Figure 3-6**. No significant effects are anticipated as a result of Feedstock Processing Facility's connections to this existing infrastructure.

Natural Gas Interconnection

On November 12, 2013, a preliminary natural gas interconnection feasibility study completed by NVE determined that there is adequate pressure in the existing distribution system to serve the Biorefinery. The Feedstock Processing Facility would not require natural gas for the MSW processing system. No significant effects are anticipated as a result of Biorefinery's and Feedstock Processing Facility's connections to this existing infrastructure.

Storm Drainage

The Biorefinery would design its storm water detention system for a 25-year storm event before releasing into the TRI Center storm water drainage system. The Feedstock Processing Facility's storm water retention system would be designed to retain a 100-year storm event on-site. No significant storm drainage effects are anticipated as a result of storm water originating from the Biorefinery's and Feedstock Processing Facility's sites due to the design of the storm water system.

Water and Sewer Service

Biorefinery

Water uses during construction of the Biorefinery will include dust control, soil compaction, hydrostatic testing, along with uses for making concrete and supporting any cleaning operations. Construction water would be supplied by the TRIGID's existing water supply system, and usage is estimated at 1.7 million gallons over the 52-week construction period. See Section 2.2.1.2. Construction wastewater would be retained in the on-site evaporation basin, or if necessary tested and released. TRIGID issued Sierra BioFuels a "will serve" letter for water and sewer service at the Biorefinery. Additionally, the CGID has represented that it has sufficient system.

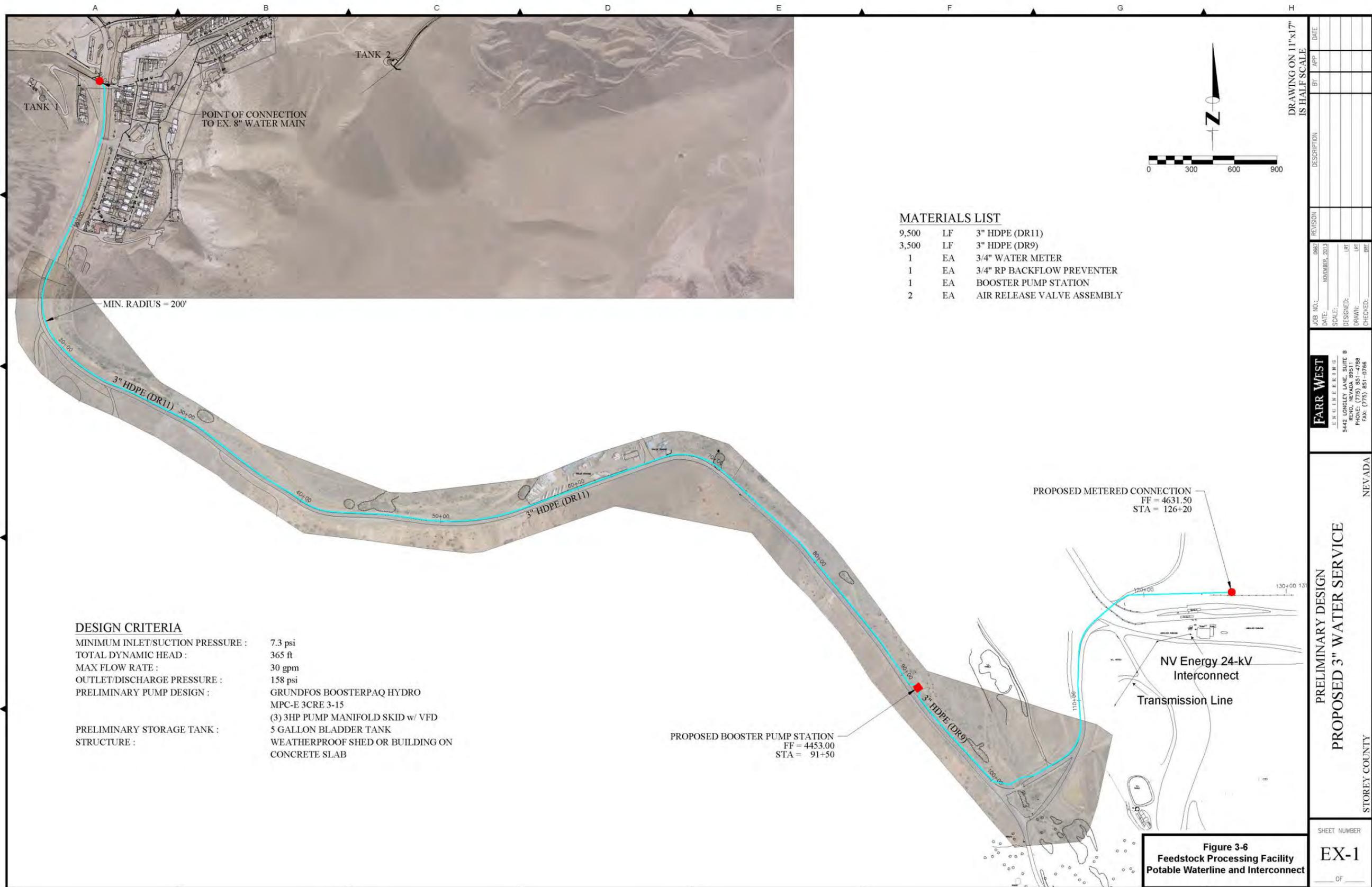
Operations at the Biorefinery would be designed for a maximum consumptive water rate of 101.3 gpm, with reserve storage capacity in a 600,000 gallon water storage tank. Most of the water 100 gpm would be used for process operations, and a long-term average of 1.3 gpm would be used for domestic water use (e.g. sanitary services), dust suppression and miscellaneous maintenance activities. The TRIGID would supply up to 16.7 gpm of potable water and has issued a "will serve" letter to Sierra BioFuels for water and sewer service.

Process wastewater from the syngas scrubbing and the FT synthesis system would be piped to the wastewater treatment system to be treated for recycle and re-use within the facility. Wastewater treatment would consist of filtration, dissolved air floatation, decarbonization, hydrocarbon adsorption, anaerobic biological treatment and aerobic biological treatment. The Biorefinery would have an on-site ZLD water treatment plant. All sanitary wastewater generated at the Biorefinery would be discharged to the TRI Center sanitary sewage system. Details of the Biorefinery's water usage and process wastewater during operations are provided in Section 2.2.1.4. No significant water and sewer service effects are anticipated as a result of the Biorefinery's interconnection to the TRI Center water and sewer infrastructure.

Feedstock Processing Facility

Construction water for use in dust control, soil compaction, and domestic uses for the contractors would be supplied by the site construction contractor. Sanitary wastes would be removed by the contractor. See Section 2.2.2.2.

Approximately 13,000 linear feet of 3-inch HDPE water line would be installed in the Storey County ROW along Canyon Road for an interconnection to the CGID potable water system. This water line is depicted in **Figure 3-6** along with other project support connections. All sanitary wastewater generated at the Feedstock Processing Facility would be discharged to an on-site sewage disposal system designed and

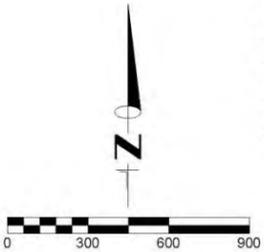


DESIGN CRITERIA

MINIMUM INLET/SUCTION PRESSURE : 7.3 psi
 TOTAL DYNAMIC HEAD : 365 ft
 MAX FLOW RATE : 30 gpm
 OUTLET/DISCHARGE PRESSURE : 158 psi
 PRELIMINARY PUMP DESIGN : GRUNDFOS BOOSTERPAQ HYDRO MPC-E 3CRE 3-15 (3) 3HP PUMP MANIFOLD SKID w/ VFD
 PRELIMINARY STORAGE TANK : 5 GALLON BLADDER TANK
 STRUCTURE : WEATHERPROOF SHED OR BUILDING ON CONCRETE SLAB

MATERIALS LIST

9,500	LF	3" HDPE (DR11)
3,500	LF	3" HDPE (DR9)
1	EA	3/4" WATER METER
1	EA	3/4" RP BACKFLOW PREVENTER
1	EA	BOOSTER PUMP STATION
2	EA	AIR RELEASE VALVE ASSEMBLY



DRAWING ON 11"x17" IS HALF SCALE

REVISION	DESCRIPTION	BY	DATE

JOB NO.: 0987
 DATE: NOVEMBER, 2013

SCALE: DESIGNED: DRAWN: CHECKED:

FARR WEST
 ENGINEERING
 5442 LONGLEY LANE, SUITE B
 RENO, NEVADA 89511
 PHONE: (775) 851-4788
 FAX: (775) 851-0766

NEVADA

PRELIMINARY DESIGN
PROPOSED 3" WATER SERVICE

STOREY COUNTY

SHEET NUMBER
EX-1
 OF

Figure 3-6
Feedstock Processing Facility
Potable Waterline and Interconnect

installed under a permit issued by the NDEP – BWPC. Details of water usage and the on-site sewage disposal system process wastewater during operations are provided in Section 2.2.2.4. No significant water and wastewater disposal effects are anticipated as a result of the Feedstock Processing Facility.

Other Utility Services

The level of service provided for telephone and cable TV would be sufficient to meet the needs of the Biorefinery and Feedstock Processing Facility. No significant effects from other utility services are anticipated as a result of the Biorefinery's and Feedstock Processing Facility's connections to this existing infrastructure.

3.3.2.2 No Action Alternative

Since the Biorefinery and Feedstock Processing Facility would be located in areas of Storey County zoned for heavy industrial land uses and infrastructure has previously been installed to support large industrial development, it would be expected that if the IBPE would not be built that similar uses would occur at the sites and that the effects would be the same as with the Proposed Action alternative (i.e., minimal effects since transportation corridors, railways, infrastructure, and utilities have already been upgraded to handle demand from these type of uses). There also would be no effects from public health and safety as a result of the facilities. It would be possible that another industrial use would present similar potential health and safety effects.

3.4 Traffic/Transportation

3.4.1 Affected Environment

Biorefinery

Adequate transportation infrastructure (e.g., access roads, railroad links) is in place as part of the TRI Center development. The USA Parkway interchange (formerly known as the Tracey-Clark interchange) along I-80 was recently upgraded and relocated to the east in order to be the primary entry to the TRI Center. The TRI Center is served by both UP and BNSF rail service providers. UP owns the main east-west line that traverses the State of Nevada along the I-80 corridor approximately 2.5 miles in a direction line from the Biorefinery. BNSF has haul rights on the UP line.

Primary access to the Biorefinery would be via the USA Parkway exit on I-80, approximately 2.8 roadway-miles north of the Biorefinery. The USA Parkway interchange (formerly known as the Tracey-Clark interchange) along I-80 was recently upgraded and relocated to the east in response to the predicted increase in traffic volume over the next 20 years associated with the current and planned development of the TRI Center.

Within the TRI Center, USA Parkway leads directly to Peru Drive. The main entrance to the Biorefinery would be from Peru Drive. Streets within the TRI Center are designed and constructed to carry traffic associated with the "I-2 Heavy Industrial" zoning; thus, they are sufficient to meet the traffic patterns resulting from the Biorefinery's daily operations. All improved public streets within the TRI Center have been transferred to Storey County who maintains them (including snow removal).

Feedstock Processing Facility

Primary access to the Feedstock Processing Facility from I-80 would be via the existing Mustang Road, from approximately 2 roadway miles north of the Feedstock Processing Facility as shown in **Figure 3-6**.

3.4.2 Environmental Effects – Traffic/Transportation

3.4.2.1 Proposed Action

Table 2-1 and **Table 2-5** provide a summary of the estimated maximum total daily vehicle trips associated with the Proposed Action. For the Biorefinery, construction would take place over a 16-month

period, and all deliveries to the site for construction would be over existing roadways, both within the TRI Center and on public access highways. During operation of the Biorefinery, increases in vehicle trips would occur with up to 19 trips per day associated with up to 32 staff, up to 5 trips per day associated with commercial service deliveries, up to approximately 20 trucks per day for feedstock deliveries, and up to 4 trips per day for SPK fuel loading and shipment. During operations, up to 164 round trip vehicle trips per day would be added to the existing transportation system. The Biorefinery would use existing roads, railways, infrastructure, and utilities designed to accommodate a heavy industrial center. Since the Biorefinery would be located in an area that was developed with the intent of housing heavy industrial uses, the demand on transportation corridors, railways, infrastructure, and utilities associated with the Biorefinery would not overload the existing upgraded systems. Therefore, impacts are anticipated to be minimal. Details of Biorefinery traffic and related operations are provided in Section 2.2.1.3.

At the Feedstock Processing Facility, construction activities would involve, site preparation, delivery of equipment and constructor contractor personnel over existing public access roadways. Operations at the Feedstock Processing facility would add approximately 138 new to support the processing operations. These trips are shown in **Table 2-6**. These trips would support the shipping of wrapped feedstock bales to the Biorefinery, and would include shipping of recovered materials and employee arrivals and departures. Access to the site would be from Exit 23 of I-80 to the southern frontage road and then to Mustang Road which leads to the gated entrance and private road of the Lockwood Regional Landfill. Shipments of baled feedstock also would travel this route, the USA Parkway exit of I-80 to enter the TRI Center. As discussed in Section 2.2.2.3 and displayed in **Table 2-6**, up to 20 trips per day of baled feedstock will be transported from the Feedstock Processing Facility for delivery to the Biorefinery. Details of the transportation requirements are provided in Section 2.2.2.3.

All roads are existing and currently paved. Therefore, impacts are anticipated to be minimal.

3.4.2.2 No Action Alternative

The Feedstock Processing Facility would be located adjacent to the Lockwood Regional Landfill. The Biorefinery would be located in an industrial park that has been developed to support a heavy industrial uses. It would be expected that if either facility would not be built that a similar use would occur at the sites and that the effects would be similar to the Proposed Action alternative (i.e., minimal effects since transportation corridors, railways, infrastructure, and utilities have already been upgraded to handle demand from this type of use).

3.5 Water Resources

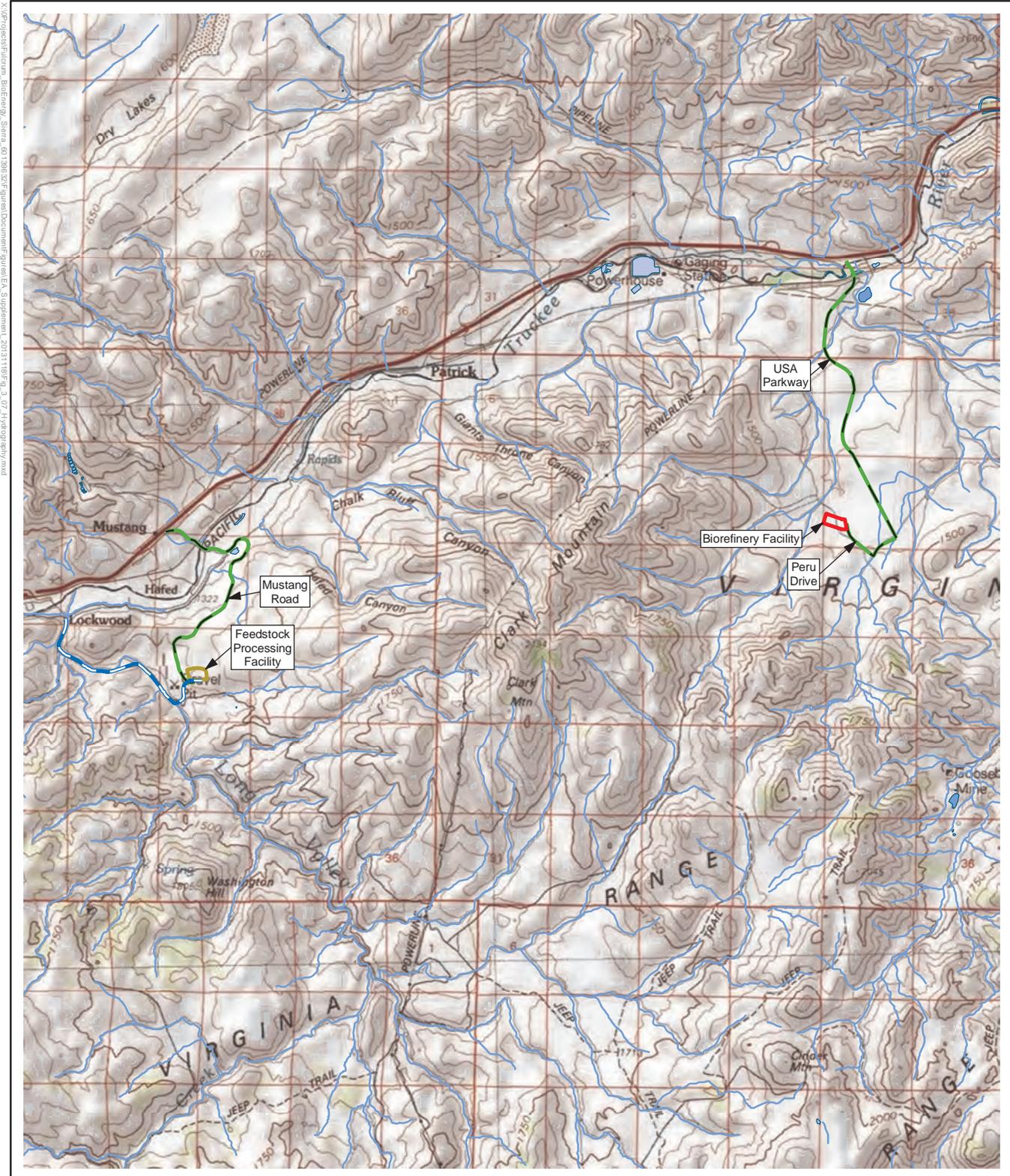
3.5.1 Affected Environment

3.5.1.1 Surface Water

Biorefinery

The Biorefinery site is located south of the Truckee River within the foothills of the east-west trending Virginia Range. The regional topography slopes in a northeasterly direction toward the river with an approximate slope gradient of 5 percent. The elevation difference across the site is approximately 30 feet.

No naturally occurring surface water features have been observed at the Biorefinery site. Within the Biorefinery site, two small intermittent streams meet to form one intermittent stream in the northwest corner of the neighboring parcel to the west (Parcel 2008-13), approximately 1,000 feet northwest of the site boundary. These intermittent streams are part of a local tributary system that eventually flows north and northeast to the Truckee River, approximately 2.5 miles north. Surface water resources are shown in **Figure 3-7**.



- Biorefinery Facility
- Feedstock Processing Facility
- Project Road
- Proposed Potable Water Line
- Stream
- Lake/Pond
- Reservoir
- Swamp/Marsh

**Fulcrum Sierra Biofuels, LLC
Project Sierra**

Figure 3-7
Hydrography

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

1:100,000

There are no water bodies or springs on the Biorefinery site according to the U.S. Geological Survey (USGS) National Hydrography Database High-Resolution geodatabase. The closest defined water bodies are a small reservoir approximately 2.8 miles northeast and a wetlands area approximately 3.1 miles northeast.

A gravel storm water culvert is located at the northeastern corner of the site near the intersection of Peru Drive and the existing railroad spur (AECOM 2008). There has been no evidence found on-site of historical septic systems or potable/process/monitoring water supply wells (AECOM 2008).

Feedstock Processing Facility

The Feedstock Processing Facility site is located south of the Truckee River within the foothills of the east-west trending Virginia Range. The regional topographic slope and elevation difference is the same as the Biorefinery site.

There are no water bodies or springs on the Feedstock Processing Facility site according to the U.S. Geological Survey (USGS) National Hydrography Database High-Resolution geodatabase. The closest defined water body near the Feedstock Processing Facility site is Long Valley Creek, approximately 1,500 feet to the southwest.

3.5.1.2 Floodplains

The Biorefinery site is not located in a flood zone or floodplain (FIRM No. 32029C0100D).

The Feedstock Processing Facility site is not located in a flood zone or floodplain (FIRM No. 32029C0155D).

3.5.1.3 Wetlands

Biorefinery

National Wetland Inventory information indicates that no federally designated wetlands are located on or near the Biorefinery site. No non-jurisdictional wetlands are on or near the Biorefinery site.

Feedstock Processing Facility

National Wetland Inventory information indicates that no federally designated wetlands are located on or near the Feedstock Processing Facility site. No non-jurisdictional wetlands are on or near the Feedstock Processing Facility site.

3.5.1.4 Groundwater

Biorefinery

According to well database records from the State of Nevada Department of Conservation, the closest water well to the Biorefinery site is located within the southeast quadrant of Section 10, which is approximately 1 mile from the site. This water well, completed in 1999, has a recorded static groundwater level of 759 feet below the existing ground surface. A water well was drilled to 800 feet within Section 10 for Tahoe-Reno Industrial Sewer and Water and groundwater was not encountered. This water well was not completed. Based on information from the topographical map of the project area of the Biorefinery site, groundwater flows north-northeast towards the Truckee River.

Feedstock Processing Facility

According to well database records from the State of Nevada Department of Conservation, the closest water well to the Feedstock Processing Facility site is approximately 2,600 feet to the west-southwest. It was completed in 1978 to a depth of 112 feet recorded a static water level of 35 feet. Based on

information from the topographical map of the project area of the Feedstock Processing Facility site, groundwater flows north-northwest towards the Truckee River.

3.5.2 Environmental Effects – Water Resources

3.5.2.1 Proposed Action

Surface Water

Biorefinery - Construction

Disturbance of the Biorefinery site during construction would have the potential for erosion and sediment transport during storm events. Despite the significant distance to surface water, there is a slight potential for storm water run-off from the property. Since the Biorefinery would disturb more than 1 acre, it would be subject to the requirements of NDEP-BWPC's *General Permit for Stormwater Discharges from Construction Activities* (General Permit No. NVR10000). Sierra BioFuels would apply for a *Construction Stormwater Discharge Permit* from NDEP-BWPC through the submittal of a NOI. In addition, the facility would develop a SWPPP that would detail the BMPs that would be implemented prior to the initiation of construction. Representative BMPs include:

- Installation of physical barriers such as silt fencing, straw bales, straw wattles (woven mesh netting), and/or riprap to minimize transport of sediment and other pollutants.
- Installation of storm water drains, culverts, and other constructed conveyances to collect storm water and direct flow in process areas to the evaporation pond and divert flow away from process areas where appropriate.
- Use of secondary containment for storage of oils and chemicals.
- Inspections of the site and BMPs once a week and after every rain event greater than 0.5 inch.
- Monitoring of construction entrances for significant sediment that could be tracked out of the construction site. The on-road sediment would be regularly cleaned up and removed.

In addition, both construction sites would have temporary and permanent storm water detention basins to maintain the hydraulic flow characteristics of storm water that were present before site development.

All storm water BMPs would be maintained until construction activities would be complete and site vegetation has returned to 70 percent of its original natural density. A Notice of Termination of the permit would then be submitted to the NDEP-BWPC.

During construction, sanitary sewage from construction workers would be collected in portable facilities and removed by a contractor to an off-site treatment facility. Temporary construction water would be obtained from the TRI Center's existing water supply system. It is estimated that approximately 1.7 million gallons of water would be consumed over the 52-week construction period. Minor volumes of water (less than 50,000 gallons) also would be used for hydrostatic testing of tanks and pipes.

As a result of these measures and the distance from any streams and water bodies there would be no potential for effects to surface water at the Biorefinery site during the construction phase.

Biorefinery - Operation

Both the process water (i.e., water that is required for facility operations) and potable water that would be used by the Biorefinery would be provided by the TRI Center through supply piping connected to the existing TRI Center water system. Process water would be used primarily for cooling tower make-up, scrubber system make-up, and in small volumes for various plant uses such as washdown water and dust control. Local surface water would not be used either to supply plant operations or for potable use. Demand from the Biorefinery would not be expected to exceed the established water right owned by the TRI Center.

The Biorefinery's process wastewater would be generated primarily from the following sources: venturi scrubber, contact cooler, compressor knock-out drums, and cooling tower blowdown (see **Table 2-4**). The waters from the syngas scrubbing system generally have inorganic contaminants while the water from the FT section has organic contaminants. The process wastewater would be piped to the wastewater treatment system to be treated for re-use in the Biorefinery. The wastewater treatment system would utilize several treatment processes to treat and remove both organic and inorganic materials from the wastewater stream to maximize the water recycle to the Biorefinery and eliminate discharge to the TRI Center sewer system. Solids removed from the wastewater system would be collected and disposed off-site.

Once operational, the Biorefinery would be subject to NDEP-BWPC's *Stormwater General Permit for Stormwater Associated with Industrial Activity*, Permit No. NVR050000. Prior to plant start-up, the facility would apply for a storm water permit by submitting a NOI. In addition, the Biorefinery would develop a SWPPP that details the BMPs that would be implemented during plant operation to minimize the potential contamination of storm water. The Biorefinery's storm water drainage system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department. The Biorefinery's storm water runoff would be collected and routed to the storm water detention pond on site, designed to retain runoff from a 25-year storm. The TRI Center has installed a retention pond and a series of storm water canals and weirs, which are designed to retain the equivalent of a 100-year storm. The TRI Center storm water system would serve as a backup to the Biorefinery's on-site detention pond. Site-specific BMPs would be developed once the site layout, engineering specifications, and operating procedures are finalized. BMPs could include treatment requirements, operating procedures, and management practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage as well as erosion and sediment controls, storm water conveyance and diversion, or treatment structures. The Biorefinery's storm water drainage and management system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

The primary source of sanitary wastewater would be the restrooms, showers, and kitchen areas of the Biorefinery. Sanitary wastewater usually contains pathogenic microorganisms that dwell in the human intestinal tract. It also contains nutrients, which can stimulate the growth of aquatic plants and organic compounds that can produce malodorous gasses. All sanitary wastewater generated at the Biorefinery would be discharged directly to the TRI Center sanitary sewage system. Sierra BioFuels has received a "will serve" letter from TRIGID for receipt of the sanitary wastewater.

As a result of the design features discussed above and the distance from streams or water bodies there would be no potential for effects to surface water from the Biorefinery site during the operational phase.

Feedstock Processing Facility - Construction

Surface water effects associated with construction of the Feedstock Processing Facility would be similar to surface water effects for construction of the Biorefinery. Construction water used for dust control would be supplied by the construction contractor from existing water sources and trucked or provided through temporary water lines to the site during construction. Potable water for construction would be provided by local vendors of bottled drinking water.

As a result of these measures and the distance from any streams and water bodies there would be no potential for effects to surface water at the Feedstock Processing Facility site during the construction phase.

Feedstock Processing Facility - Operation

Surface water effects associated with the operations of the Feedstock Processing Facility would be similar to surface water effects for the operations of the Biorefinery with the exception that all of the

facility's storm water would be retained on-site. Additionally, the Feedstock Processing Facility would operate an on-site septic system.

The processing operations of the Feedstock Processing Facility would not require a water supply. Potable water would be provided through a newly constructed water supply line interconnecting to CGID's potable water system. Approximately 1,300 linear feet of 3-inch HDPE subsurface water line would be installed in the ROW of Canyon Road. The location of the water line is provided in **Figure 3-6**.

As a result of the design features discussed above and the distance from streams or water bodies there would be no potential for effects to surface water from the Feedstock Processing Facility site during the operational phase.

Groundwater

Biorefinery

Sierra BioFuels would not be pumping groundwater as a source of water supply. All plant chemicals and oils would be stored in tanks and containers in good condition and in areas equipped with secondary containment for added protection against spills and leaks. All plant areas would be inspected on a daily basis for potential spills, leaks, or operating problems.

As previously mentioned, groundwater at the Biorefinery site occurs at depths greater than 700 feet below ground surface. In the unlikely event of a spill or leak, the potential to contaminate groundwater would be negligible given the depth of the water table.

Feedstock Processing Facility

Groundwater effects associated with operation of the Feedstock Processing Facility site would be similar to groundwater effects for operation of the Biorefinery site. As previously mentioned, groundwater in the area of the Feedstock Processing Facility site occurs at depths greater than 112 feet below ground surface. In the unlikely event of a spill, the potential to contaminate groundwater would be negligible given the depth of the water table.

3.5.2.2 No Action Alternative

Without the proposed project, both sites would continue to be used for industrial activities. However, given the types of protective measures that would be required in the design of industrial facilities it would be reasonable to expect that the potential impacts would be similar to the Proposed Action (i.e., little or minimal effects on water resources).

3.6 Waste Management

3.6.1 Affected Environment

Biorefinery

The Biorefinery would use and produce hazardous materials and industrial wastes, which are detailed in Section 2.2.1.4, and would be operated in accordance with the OSHA standards¹. Section 3.16 also details the historical pattern of any waste disposal at the Biorefinery site.

¹ Occupational health and safety rights for workers both during the construction and operation phases of the facility would be protected through the federal Occupational Safety and Health Act (29 USC 651 et seq.). Under this act, Congress created the OSHA, an agency of the U.S. Department of Labor. OSHA's mission is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.

Feedstock Processing Facility

The Feedstock Processing Facility would use and produce industrial supplies and industrial wastes, which are detailed in Section 2.2.2.4 Residual materials from the sorting activity would be loaded into delivery trucks, and transported to the landfill. Recovered materials would be sold in the commodities markets. Section 3.16 also details the historical pattern of any waste disposal at the Feedstock Processing Facility site.

3.6.2 Environmental Effects – Waste Management

3.6.2.1 Proposed Action

Biorefinery

The Biorefinery would use and produce hazardous materials and industrial waste. Operations of the Biorefinery would include receiving both specialty chemicals in small containers, and bulk chemicals for storage in tanks, pressurized vessels, and silos. Most of the specialty chemicals would be stored in smaller totes and vessels that are easily managed and limit any environmental effect from an unexpected release. SPK fuel produced by the Biorefinery would be provided as a fuel to various end-users for use or further blending. The industrial wastes generated at the Biorefinery include inert material and process residue such as sulfur, ash, gasifier inert material (e.g. glass, ferrous and non-ferrous metals), water treatment salts, and spent adsorbents and catalysts. These industrial wastes would be transported to market if there is a beneficial use of such byproducts or to an appropriate disposal site. Sierra BioFuels has identified existing disposal sites and facilities that are available to accept and handle any amount of the industrial wastes expected to be generated. The Biorefinery's SOP would include a procedures for checking and identifying any potentially hazardous materials that were inadvertently brought on site as feedstock, or generated by the Biorefinery operations, for example during an equipment or process malfunction The SOP would include procedures to isolate or contain such waste, provide appropriate waste identifications, and transport the waste to a licensed off-site processing or disposal facility.

Industrial chemicals used by the Biorefinery would be stored, handled, and used in accordance with all applicable local, state, and federal regulations. While a potential for spills would exist at the Biorefinery because of the nature of the operations, no direct effects would be anticipated as a result of the facility since an active program to clean up spills, baled feedstock, and an adequate passive protection around all storage tanks at the facility would be developed and implemented.

Feedstock Processing Facility

The only wastes generated at the Feedstock Processing Facility would be the Residual Materials sorted from the MSW (see Section 2.2.2.1). The Residual Materials would originally be transported to the landfill prior to being tipped on the Feedstock Processing Facility's tipping floor, therefore the only effect of this operation would be to reduce a significant portion of the MSW that would have gone to the landfill. There would be no process wastes generated at the Feedstock Processing Facility.

3.6.2.2 No Action Alternative

Under the No Action Alternative, there would be no direct effects from hazardous waste and materials as a result of the IBPE. It would be possible that another industrial use would present similar potential health and safety effects hazardous materials and waste. All the MSW that would have been transported to the landfill would continue to be handled in that manner.

3.7 Geological Resources and Soils

3.7.1 Affected Environment

Topography

Biorefinery

The Biorefinery site is situated at an elevation of approximately 4,600 feet above mean sea level and south of the Truckee River Corridor. Local topography of the site is created by geomorphic features associated with an alluvial fan near the mouth of a canyon. The regional topography slopes in a northeasterly direction with an approximate slope gradient of 5 percent. The elevation difference across the site is approximately 30 feet.

Feedstock Processing Facility

The Feedstock Processing Facility site is located south of the Truckee River within the foothills of the east-west trending Virginia Range. The site elevation is approximately 4,750 feet above mean sea level, with a slight slope (6 to 8 percent) toward the west. .

Geology

Biorefinery

The Biorefinery site is generally located within the western portion of the Basin and Range province of the Great Basin. Physiographic features of the Basin and Range are typified by north-south trending mountain ranges, which are separated by alluvial valleys. The site is situated within the foothills along the northern terminus of the Virginia Range. Bedrock in the area consists of volcanic rock (Stantec Consulting Inc. [Stantec] 2008).

Geology at the site is mapped as Quaternary Alluvium by the Southwest Regional Gap Analysis Project (SWReGAP²). Geology on-site includes Quaternary stream deposits, talus, slope wash, alluvial fan, and eolian deposits. Bedrock within the hillsides adjacent to the site is mapped as Kate Peak Formation, which consists of various rocks associated with volcanic activity including basalt-type flows, flow breccia, tuff breccia, mudflow breccia, agglomerate, volcanic conglomerate and associated intrusive rocks ranging in composition from pyroxene andesite to rhyodacite (Bonham and Papke 1969 as interpreted by Stantec [2008]).

Feedstock Processing Facility

The local geology of the Feedstock Processing Facility site is similar to the local geology the Biorefinery.

Soils

Biorefinery

Stantec (2008) observed the predominant native soil unit as consisting of a coarse grained alluvial fan deposit of poorly graded gravel with silt, sand, cobbles, and boulders up to approximately 3 feet in dimension. An argillic horizon, composed of sandy fat clay with a thickness up to 1.5 feet, overlies this alluvial fan horizon.

² SWReGAP is a multi-institutional cooperative effort coordinated by the USGS Gap Analysis Program to provide a coordinated mapping approach to create detailed, seamless GIS maps of land cover, all native terrestrial vertebrate species, land stewardship, and management status, and to analyze this information to identify those biotic elements that are underrepresented on lands managed for their long term conservation or are “gaps.”

There is no prime farmland as defined pursuant to the Farmland Protection Policy Act or hydric soils³ on the site.

Feedstock Processing Facility

A geotechnical site investigation was conducted in November 2013 by Applied Soil Water Technologies, LLC (ASW, 2013), which included soil investigations to 14 feet below ground surface. Clay soils were encountered from the ground surface to 7.25 to 8.7 feet below the ground surface. Underlying the clay soils are Tertiary sediments, with non-plastic silty sands with gravels and some cobbles, to the depths explored. No groundwater was encountered during these tests.

Seismic Hazards

Biorefinery

The Biorefinery site lies near the eastern base of the Sierra Nevada Mountains, within the western extreme of the Basin and Range physiographic province. This is an area of known modern seismic activity. No mapped faults are located trending through the site. The closest mapped fault zone is the Olinghouse Fault Zone, located approximately 5 miles north of the sites. The Olinghouse Fault Zone is associated with an estimated magnitude 6.7 earthquake and associated surface rupture in 1869 (Adams and Sawyer 1999; USGS and Nevada Bureau of Mines and Geology 2006).

Seismic hazards associated with ground failure during shaking include liquefaction and landslides. Liquefaction is a loss of soil shear strength that can occur during a seismic event, as cyclic shear stresses cause excessive pore water pressure between the soil grains that can result in catastrophic settlements of large structures. Due to the presence of dense granular soils and a deep groundwater table, liquefaction potential is negligible (Stantec 2008). The site is identified by the USGS as having moderate landslide potential because of soil types present (USGS 2005); however, there is no risk of landslides at the sites due to the low relief on both sites and distance to any steep slopes.

Feedstock Processing Facility

The hazards associated with the Feedstock Processing Facility site are similar to the seismic hazards of the Biorefinery site.

3.7.2 Environmental Effects – Geological Resources and Soils

3.7.2.1 Proposed Action

Biorefinery

There is no potential for adverse impact to geology and soils at the Biorefinery site. Design specifications as detailed in the geotechnical report (Stantec 2008) for the site regarding seismic constraints and placement of fill material would minimize the potential for damage to facility structures. Additionally, as detailed in Section 3.5.2.1, a SWPPP would be developed that would include site-specific BMPs to reduce erosion potential. The Biorefinery site also would be subject to NDEP-BWPC's *Stormwater General Permit for Stormwater Associated with Industrial Activity*, Permit No. NVR050000. The Biorefinery's storm water drainage and management system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

³ Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part, and are part of the criteria for identifying wetlands.

Feedstock Processing Facility

Seismic hazard effects for the Feedstock Processing Facility would be the same as for the Biorefinery. Design specifications as detailed in the preliminary geotechnical report (ASW 2013) for the site regarding seismic constraints and placement of fill material would minimize the potential for damage to facility structures. The Feedstock Processing Facility site also would be subject to NDEP-BWPC's *Stormwater General Permit for Stormwater Associated with Industrial Activity*, Permit No. NVR050000. The facility's storm water retention system would be designed in accordance with a grading and drainage plan approved by the Storey County Building Department.

3.7.2.2 No Action Alternative

Since the IBPE sites are in industrial areas it would be likely that should they not be constructed another, similar use of the sites would eventually take place, in which case impacts should be the same as with the Proposed Action (i.e., no or minimal impact).

3.8 Vegetation

3.8.1 Affected Environment

Biorefinery

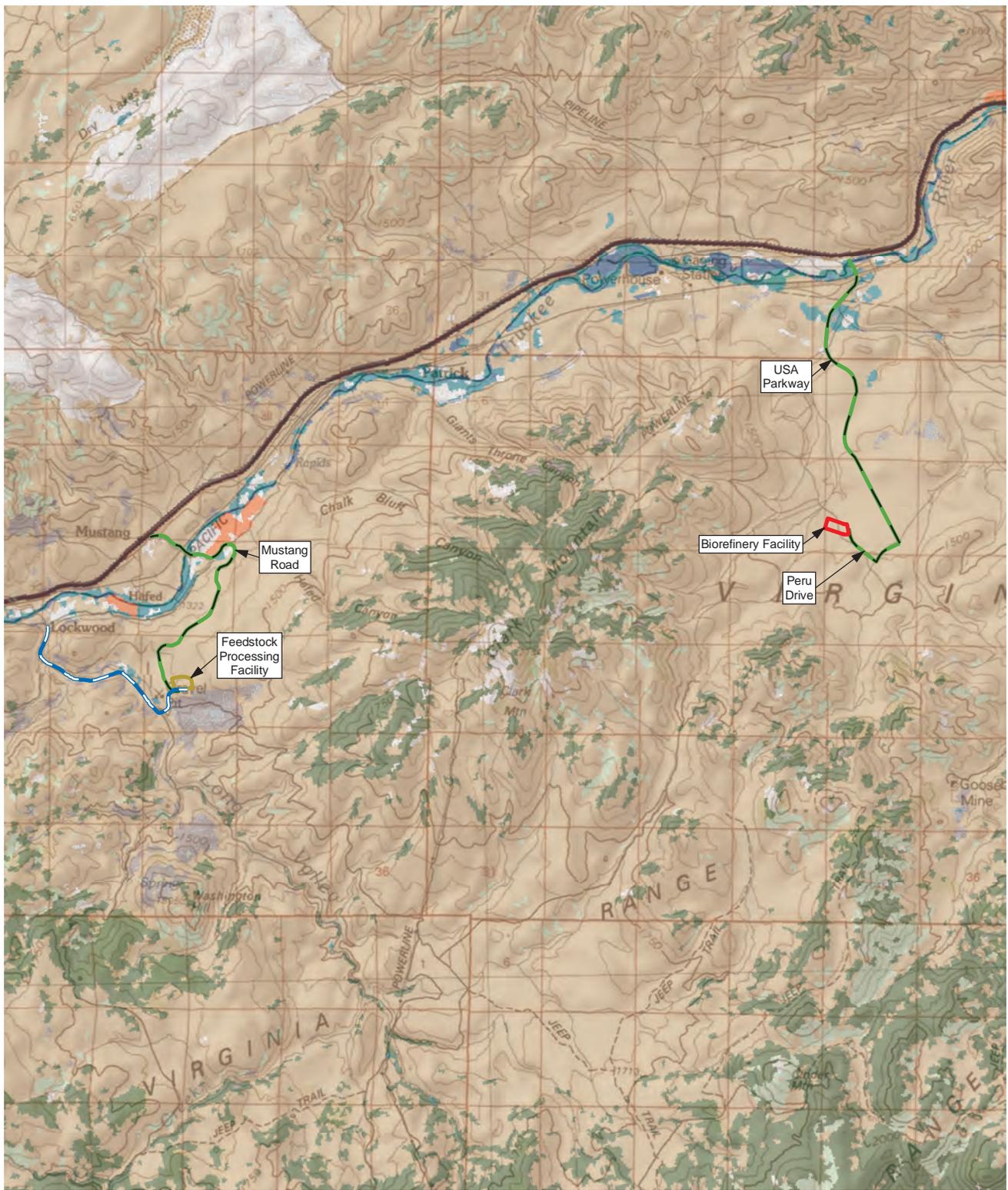
Vegetation in the vicinity of the Biorefinery project area is shown in **Figure 3-8**. The project area is classified as "Inter-mountain Basins Big Sagebrush Shrubland" by SWReGAP. According to NatureServe (2008), this ecological system occurs throughout much of the western U.S., typically in broad basins between mountain ranges, plains, and foothills between 4,600 and 7,600 feet in elevation. Soils are typically deep, well-drained, and non-saline. These shrublands are dominated by *Artemisia tridentata* ssp. *tridentata*. Scattered *Juniperus* spp., *Sarcobatus vermiculatus*, and *Atriplex* spp. may be present in some stands. *Ericameria nauseosa*, *Chrysothamnus viscidiflorus*, *Purshia tridentata*, or *Symphoricarpos oreophilus* may codominate disturbed stands (e.g., in burned stands, these may become more predominant). Perennial herbaceous components typically contribute less than 25 percent vegetative cover. Common graminoid species can include *Achnatherum hymenoides*, *Bouteloua gracilis*, *Elymus lanceolatus*, *Festuca idahoensis*, *Hesperostipa comata*, *Leymus cinereus*, *Pleuraphis jamesii*, *Pascopyrum smithii*, *Poa secunda*, or *Pseudoroegneria spicata*. Some seminatural communities are included that often originate on abandoned agricultural land or on other disturbed sites. In these locations, *Bromus tectorum* or other annual bromes and invasive weeds can be abundant (NatureServe 2008).

Cheatgrass (*Bromus tectorum*) increases the likelihood of fire in mixed sagebrush-cheatgrass sites, but burning may produce dominance of cheatgrass and other weeds. Following a fire, sagebrush must reestablish itself from seed; growth and recovery are slow (Bunting et al. 1987). Fire favors shrubs like *Ericameria nauseosus* that can re-sprout after fire. Fire suppression in montane grasslands could lead to conversion to *Artemisia tridentata* shrublands.

Feedstock Processing Facility

Vegetation in the vicinity of the Feedstock Processing Facility site is similar as the Biorefinery site.

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Biorefinery Facility	Land Cover (SWReGAP)	Evergreen Forest
Feedstock Processing Facility	Agriculture	Grassland/Herbac...
Project Road	Altered or Disturbed	Open Water
Proposed Potable Water Line	Barren Lands	Scrub/Scrub
	Developed	Woody Wetland

**Fulcrum Sierra Biofuels, LLC
Project Sierra**

Figure 3-8
Landcover (SW ReGAP)

0 0.5 1 2 Miles
0 0.5 1 2 Kilometers

1:100,000

3.8.2 Environmental Effects – Vegetation

3.8.2.1 Proposed Action

Biorefinery

The Biorefinery would remove approximately 19.4 acres of sagebrush vegetation and understory grasses. For purposes of this analysis, it is assumed that all this area would be disturbed during construction. Approximately 16.77 acres of the Biorefinery site was cleared and graded in 2012 and construction of roadways and other infrastructure has occurred over limited areas nearby. The sagebrush vegetation and understory grasses are typical of the surrounding area and do not contain any unique or significant vegetation species.

Feedstock Processing Facility

The Feedstock Processing Facility would remove approximately 14.4 acres of sagebrush vegetation and understory grasses. A portion of the Feedstock Processing Facility site has been disturbed. Effects to vegetation resources would be similar to the Biorefinery.

3.8.2.2 No Action Alternative

A portion of the IBPE sites are already disturbed as a result of cleaning, grading and surface activities. Roadways and infrastructure have already been constructed adjacent to the sites. Both sites are zoned for heavy industrial uses, and removal of sagebrush vegetation and understory grasses on the remainder of the acreage would likely occur in the future under the No Action Alternative. The TRI Center is actively pursuing development at the Industrial Park and will continue to do so; and adjacent and surrounding properties are being developed on a continual basis. Therefore, it is expected that impacts under the No Action Alternative would be similar to those described under the Proposed Action.

3.9 Wildlife and Fisheries

3.9.1 Affected Environment

The following descriptions of both resident and migratory wildlife include species that have either been documented near the project area of the Biorefinery site and the Feedstock Processing Facility site or those that may occur in western Nevada based on habitat associations. Wildlife species occurring near the Site are typical of the intermountain semi-desert shrublands of the Truckee River valley. Information regarding wildlife species and habitat near the site was obtained from a review of existing published sources, U.S. Fish and Wildlife Service (USFWS), NDOW file information, and Nevada Natural Heritage Program (NNHP) database information. Consultation with the USFWS was not required due to the absence of federally listed plant or wildlife species at either site, as noted in Section 3.10. Additionally, consultation with the NDOW also was not required as a result of the limited amount of habitat affected and the industrial zoning and nature of the site. However, Sierra BioFuels submitted correspondence on May 20, 2014, with both agencies in order to obtain concurrence regarding any consultation issues. NDOW provided concurrence July 29, 2014, and copies of that correspondence, as well as all other consultation, are provided in **Appendix D**.

3.9.1.1 Big Game

Biorefinery

The Biorefinery project area does not contain any important big game habitats such as migration corridors, critical winter habitat, or calving/fawning/lambing habitats (NDOW 2008a,c). Big game use of the site is low, based on scat present, and consists mainly of mule deer (*Odocoileus hemionus*) occasionally wandering through the site. Big game population numbers in the western Nevada fluctuate slightly from year-to-year based on weather and habitat conditions. Water availability and the amount of quality habitat are the limiting factors to big game populations within the project area. Human presence,

water availability, forage quality, cover, and weather patterns typically determine the level of use and movement of big game species.

The Biorefinery site has been mapped as containing Mule Deer Limited Range (**Figure 3-9**) and Potential Bighorn Sheep Range (*Ovis canadensis*) (**Figure 3-10**).

Mountain lions (*Puma concolor*) and black bears (*Ursus Americana*) also are classified as a big game species in Nevada (NDOW 2008a,b). Both of these species are fairly common in western Nevada and typically occupy the higher elevations surrounding the site; although they may travel through the project area if prey populations are present (NDOW 2008a,b).

Feedstock Processing Facility

The potential for big game near the Feedstock Processing Facility site is similar to the Biorefinery, with the exception that potential bighorn sheep range is present within the Feedstock Processing Facility site (NDOW 2008a,c), but due to the industrial development in the vicinity, bighorn sheep are not likely to use the site, and there would be no effect on their habitat or population resulting from this facility.

3.9.1.2 Wild Horses

Biorefinery

Wild horses (*Equus ferus*) have been observed near the Project area. However, the Biorefinery is within an existing Herd Management Area (HMA). The nearest HMA in the Carson City BLM District is the Pine Nut Mountains HMA located to the south of State Highway 50, approximately 20 miles to the south of the site. The BLM is legally required to manage wild horses and burros only in designated HMAs where they were found in 1971. Passage of the Wild Free-Roaming Horses and Burro Act (P.L. 92-195) in 1971 required the BLM to protect, manage, and control wild free-roaming horses and burros on public lands. Through land use planning, BLM evaluates each herd area to determine if it has adequate food, water, cover and space to sustain healthy and diverse wild horse and burro populations over the long term. The areas which meet these criteria are then designated as HMAs.

Feedstock Processing Facility

The potential for wild horses near the Feedstock Processing Facility site is similar to the Biorefinery.

3.9.1.3 Small Game

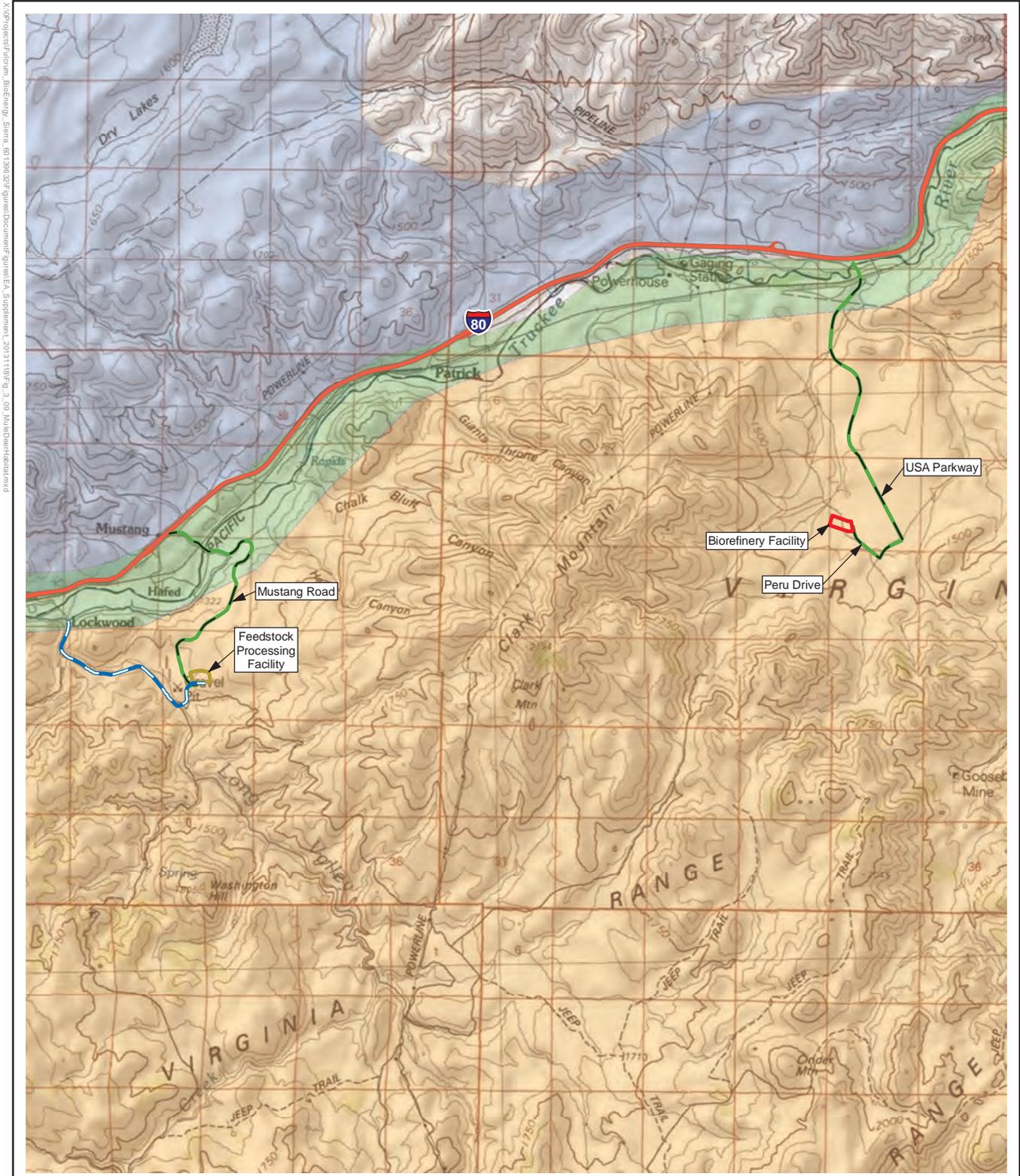
Biorefinery

Small game species that could potentially occur near the Biorefinery site include chukar (*Alectoris chukar*), mourning dove (*Zenaida macroura*), cottontail (*Sylvilagus sp.*), and black-tailed jackrabbit (*Lepus californicus*) (NDOW 2008b). Chukar are mainly found west of the site, especially on rocky ridges and hillsides with cheatgrass (NDOW 2008b). Mourning doves are found in wide range of habitats in close proximity to water and are most likely to occur near both sites during spring, summer, and early fall. Furbearers that may occur near the Site include badger (*Taxidea taxus*), red fox (*Vulpes vulpes*), and bobcat (*Lynx rufus*) (NDOW 2008b).

Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 4.5 miles in a direct line north of the site and are not typically found near the project area.

Feedstock Processing Facility

The potential for small game near the Feedstock Processing Facility site is similar to the Biorefinery site. Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 1.0 mile in a direct line north of the site and are not typically found near the project area.



- Biorefinery Facility
- Feedstock Processing Facility
- Project Road
- Proposed Potable Water Line

- Mule Deer (*Odocoileus hemionus*) Limited Habitat
- Mule Deer (*Odocoileus hemionus*) Crucial Winter Habitat
- Mule Deer (*Odocoileus hemionus*) Agricultural Unique Habitat

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Project Sierra**

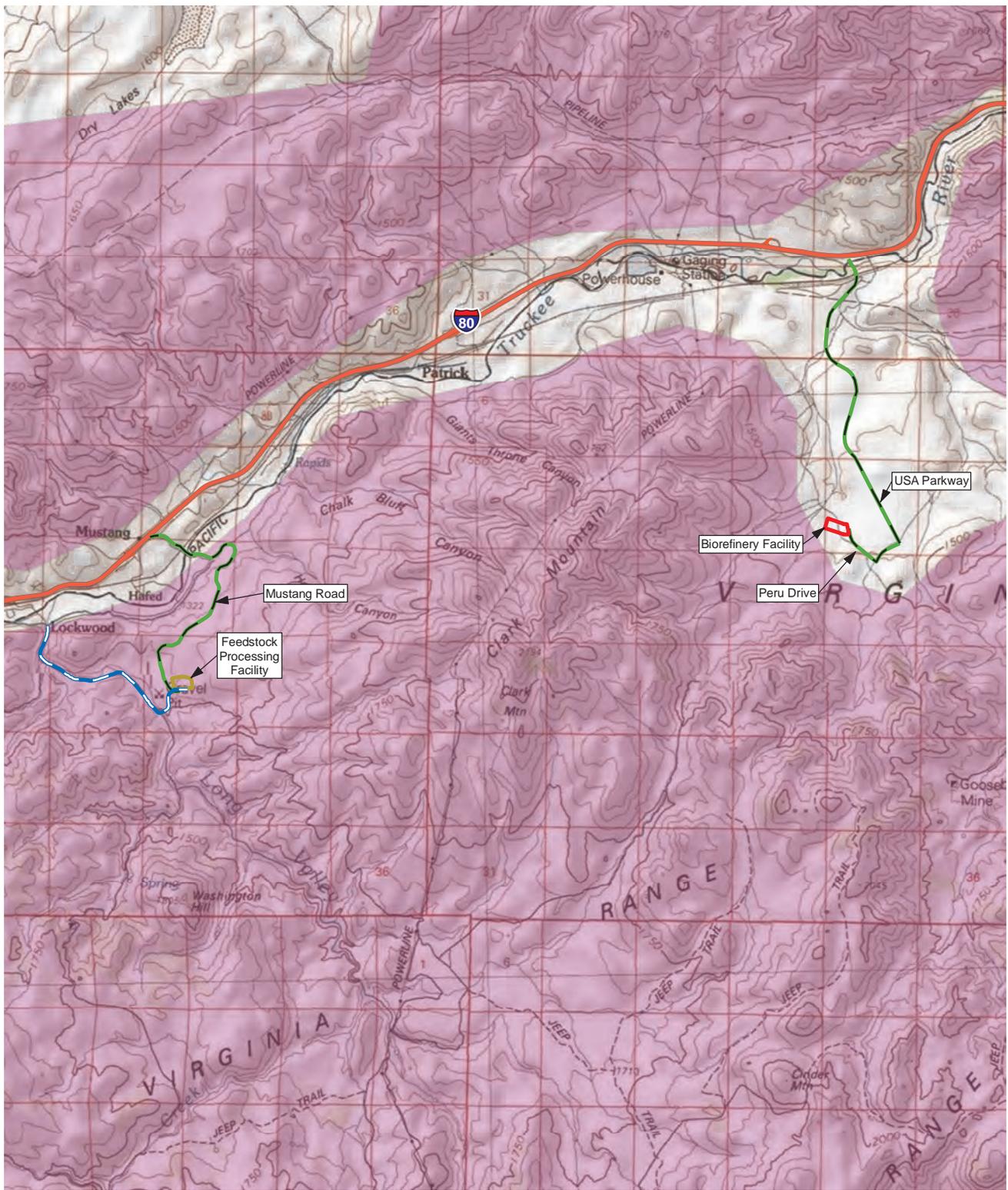
Figure 3-9
Mule Deer (*Odocoileus hemionus*) Habitat

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

1:100,000

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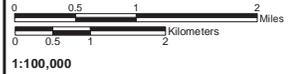
- Biorefinery Facility
- Feedstock Processing Facility
- Project Road
- Proposed Potable Water Line

Bighorn Sheep (*Ovis canadensis*) Potential Habitat

**Fulcrum Sierra Biofuels, LLC
Project Sierra**

Figure 3-10

Bighorn Sheep (*Ovis canadensis*)
Potential Habitat



3.9.1.4 Nongame Species

Biorefinery

A diversity of nongame species (e.g., small mammals, passerines, raptors, and reptiles) occupy a wide range of trophic levels and habitat types within the region. Habitat found on the site (e.g., sagebrush shrubland) supports a variety of resident and seasonal nongame species. Nongame mammals include such species as deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), desert woodrat (*Neotoma lepida*), and Ord's kangaroo rat (*Dipodomys ordii*) (Hall 1995). They provide a substantial prey base for the predators including mammals (e.g., coyote, badger, skunk); raptors (eagles, hawks, falcons, owls, vultures); and reptile species found near the site. Representative birds that occur within the region are discussed in Section 3.10, Special Status Species.

Several bat species may occur near the site, including pallid bat (*Antrozous pallidus*), big brown bat (*Eptesicus fuscus*), western pipistrelle (*Parastrellus hesperus*), Yuma myotis (*Myotis yumanensis*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), long-legged myotis (*Myotis volans*), Brazilian free-tailed bat (*Tadarida brasiliensis*), and Townsend's big-eared bat (*Corynorhinus townsendii*) (Bradley et al. 2006). The pallid bat and Brazilian free-tailed bat are Nevada protected species and the Townsend's big-eared bat is a Nevada sensitive species (NDOW 2008d). These species are discussed in more detail in Special Status Species (Section 3.10).

Other important nongame species that are found near the site include several species of reptiles and amphibians. These species include the Great Basin whiptail (*Aspidoscelis tigris tigris*), Great Basin rattlesnake (*Crotalus oreganus lutosus*), and Great Basin spadefoot (*Spea intermontana*) (NDOW 2008b).

Feedstock Processing Facility

The potential for nongame species near the Feedstock Processing Facility site is similar to the Biorefinery site.

3.9.1.5 Migratory Birds including Raptors

See Section 3.10, Special Status Species, regarding a discussion on migratory birds and Birds of Conservation Concern (BCC) protected under the Migratory Bird Treaty Act (MBTA).

3.9.1.6 Fisheries

Biorefinery

No fisheries resources are found near the Biorefinery project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river's distance of approximately 4.5 miles in a direct line north of the site.

Feedstock Processing Facility

No fisheries resources are found near the Feedstock Processing Facility project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river's distance of approximately 1.0 mile in a direct line north of the site.

3.9.2 Environmental Effects – Wildlife and Fisheries

3.9.2.1 Proposed Action

Potential effects include surface disturbance or alteration of habitats, increased habitat fragmentation, animal displacement, changes in species composition, increased mortality due to poaching and harassment, and the increased likelihood of animal/vehicle collisions from increased traffic in the area. The severity of these effects on terrestrial wildlife depends on factors such as the sensitivity of the

species, seasonal use patterns, type and timing of activity, and physical parameters (e.g., topography, cover, forage, and climate).

Direct effects would be the surface disturbance of approximately 33.8 acres of potential wildlife habitat. However, since both sites are zoned for heavy industrial development, this impact would probably occur regardless of the development of the IBPE.

Big Game Species

Biorefinery

Construction of the Biorefinery would result in long-term disturbance (greater than 20 years) and removal of mule deer habitat, and would further fragment the limited habitat in the area for big game. The Biorefinery also would result in increased noise levels, human presence, proliferation of weeds, and dispersion of dust during construction, which also would affect big game that may be in the area. Big game animals would likely decrease their use within 0.5 mile of surface disturbance activities (Ward et al. 1980). Big game would be displaced to adjacent habitats in the short term and to areas outside the TRI Center in the long term as more development occurs in the TRI Center and associated nearby industrial sites. Traffic between the Biorefinery and the Feedstock Processing Facility would come near to mule deer crucial winter habitat; however, this portion of the transportation route would be on I-80, where a high volume of traffic already occurs. Additionally, local transportation routes are paved and already facilitate a high volume of heavy truck traffic. Due to the current low likelihood of big game using the project area and availability of habitat outside the Biorefinery site, impacts to big game are not expected.

Feedstock Processing Facility

Direct effects to big game species near the Feedstock Processing Facility site would be the same as described for the Biorefinery, with the exception that Bighorn Sheep habitat would be removed, further fragmenting habitat in the area for big game, although the area is already highly disturbed and industrialized.

Wild Horses

Biorefinery

In general, impacts to wild horses would result from noise and increased human activity during construction of the Biorefinery, and vehicle operation in areas where overland vehicle travel would occur. These activities could cause wild horses to avoid the project area. Potential impacts to wild horses also would include the incremental reduction of potential forage, including 19.4 acres of habitat at the Biorefinery and 14.4 acres of habitat at the Feedstock Processing Facility, and the incremental increase of noxious and invasive weeds and habitat fragmentation from vegetation removal. However, due to the industrialized nature of the area, wild horses have already been habituated to human disturbance and are known to frequent areas near the TRI Center industrial park, therefore, no impacts would be anticipated to occur.

Feedstock Processing Facility

Direct effects to wild horses near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

Small Game Species

Biorefinery

The Biorefinery would result in the incremental disturbance and removal of habitat for small game (upland game birds, small mammals) and increased habitat fragmentation. Direct effects to small game species could include nest or burrow abandonment or loss of eggs or young. There would be no effect on habitat or on species populations due to the availability of suitable habitat outside the project area.

Development also would discourage the presence of small game species as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction.

Feedstock Processing Facility

Direct effects to small game species near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

Nongame Species

Biorefinery

Direct impacts to nongame species would include disturbance and removal of habitat and increased habitat fragmentation. Impacts also could result in mortalities of less mobile species (e.g., small mammals, reptiles, amphibians, and invertebrates), nest abandonment, and loss of eggs or young as a result of crushing from vehicles and heavy equipment. Nongame species also would be less likely to use the site area as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. Impacts to nongame species populations are expected to be minimal due to the availability of habitat outside the project area. Given that the Biorefinery site is zoned for heavy industrial development, this impact would likely occur regardless of facility construction.

Feedstock Processing Facility

Effects to nongame species near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

Migratory Birds including Raptors

See Section 3.10.2.1, Special Status Species, for a discussion of environmental consequences to migratory birds and BCC species protected under the MBTA.

Fisheries

Biorefinery

There would be no effects to fisheries resources from the proposed Biorefinery, due to a lack of perennial water sources near the Biorefinery site. Facility-related activities would not affect fisheries habitat in the Truckee River.

Feedstock Processing Facility

Effects to fisheries near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

3.9.2.2 No Action Alternative

A portion of the IBPE sites are already disturbed as a result of filling and grading. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. Since both sites are zoned for heavy industrial development, removal of potential wildlife habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. No effects to wildlife species would be anticipated as the area is heavily industrialized and to a large extent, both sites have been previously disturbed. The TRI Center is actively seeking tenants to construct industrial or commercial facilities on its property, and will continue to do so in the event that this development does not take place. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.

3.10 Special Status Species

3.10.1 Affected Environment

Federally Listed Species

Biorefinery

Special status species include species listed by the USFWS as threatened, endangered, proposed and/or candidate species under the Endangered Species Act of 1973, species identified by USFWS as BCC and wildlife species identified by State of Nevada as endangered, threatened, and sensitive (NAC 501.100-503.104). The USFWS' BCC includes birds that are protected under the MBTA of 1918. Information regarding special status species near the site was obtained from a review of existing published sources, USFWS, NDOW file information, and NNHP database information.

According to the USFWS Information, Planning, and Conservation System (USFWS 2014); greater sage-grouse (*Centrocercus urophasianus*) should be considered in this analysis based on their potential for occurrence within the general geographic region of the Project area. The greater sage-grouse is classified as a federal candidate species. On March 5, 2010, the USFWS determined that the greater sage-grouse warrants protection under the ESA; however, the USFWS concluded that proposing the species for protection is precluded by the need to take action on other species facing more immediate and severe extinction threats. Therefore, greater sage-grouse in Nevada continues to be managed by the NDOW. Conservation efforts for this species in Nevada are currently coordinated by the NDOW in cooperation with the USFWS, BLM, and regional greater sage grouse working groups in an attempt to increase population levels and avoid federal listing under the ESA. In an effort to prevent federal listing of greater sage-grouse, the BLM and NDOW have recently completed mapping of core breeding areas in Nevada.

The greater sage-grouse occurs throughout Nevada in sagebrush dominated habitats. Sagebrush is a key component of greater sage-grouse habitat throughout the year (USFWS 2007). Sagebrush provides forage and nesting, security, and thermal cover for this species. Moist areas that provide succulent herbaceous vegetation during the summer are used extensively as brood-rearing habitat. Open, often elevated areas within sagebrush habitats usually serve as breeding areas (i.e., strutting grounds or lek sites) (USFWS 2007). During winter, greater sage-grouse often occupy wind exposed areas where sagebrush is available (e.g., drainages, southern or western slopes, or exposed ridges).

A review of NDOW spatial data (2008e) indicates that there are no active lek sites near either the Biorefinery or the Feedstock Processing Facility. The nearest known active lek site, the Cottonwood Creek Lek, is located approximately 13 miles to the north-northeast of the Feedstock Processing Facility and 12 miles to the north-northwest of the Biorefinery. In addition, there is no designated greater sage-grouse nesting habitat, winter distribution, or summer distribution in Storey County, Nevada. Greater sage-grouse winter range is located over 3 miles to the north of both the Feedstock Processing Facility and the Biorefinery in Washoe County. There are no federally listed plant or wildlife species known to occur at the sites.

Feedstock Processing Facility

The affected environment for federal listed species near the Feedstock Processing Facility is the same as described for the Biorefinery.

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Based on evaluation of habitat requirements and/or known distribution a total of six state listed special status wildlife species were identified as having the potential to occur near the site (NDOW 2008d; USFWS 2008). These species are listed as either Nevada State Protected (NV-SP) or Nevada State Protected Sensitive (NV-SPS). These species include three mammals: the pallid bat (*Antrozous pallidus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), and Townsend's big-eared bat (*Corynorhinus townsendii*); and three bird species: loggerhead shrike (*Lanius ludovicianus*), sage thrasher (*Oreoscoptes montanus*), and Brewer's sparrow (*Spizella breweri*). Details on each species are described in the following subsections. There are no occurrences of state listed or sensitive plant species near the site.

Seven species have been identified as BBC⁴ by the USFWS. Two of these also are state listed bird species, the loggerhead shrike and Brewer's sparrow. Five other BCC species also may occur at the site: Ferruginous hawk (*Buteo regalis*), Burrowing owl (*Athene cunicularia hypugaea*), gray vireo (*Vireo vicinior*), Virginia's warbler (*Oreothlypis virginiae*), and the sage sparrow (*Artemisiospiza nevadensis*).

Feedstock Processing Facility

The affected environment for state listed, protected, sensitive, and MBTA species near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Mammals

Biorefinery

The pallid bat (NV-SP) is a year-round resident in Nevada. Found primarily at low and mid elevations (1,300 to 8,400 feet), this species occupies a variety of habitats such as piñon-juniper, blackbrush, creosote, sagebrush, and salt desert scrub (Bradley et al. 2006). This species feeds primarily on large ground-dwelling arthropods (e.g., scorpions, centipedes, grasshoppers), but also feeds on large moths (Bradley et al. 2006). The pallid bat is a colonial species, roosting in groups of up to 100 individuals (Arizona Game and Fish Department, 1993 [AGFD 1993]). Roost sites consist of rock outcrops, mines, caves, hollow trees, buildings, and bridges (AGFD 1993; Bradley et al. 2006). The pallid bat is intolerant of roost sites in excess of 40 degrees Celsius (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near both sites is considered high.

The Townsend's big-eared bat (NV-SPS) is a year-round resident found throughout Nevada from low desert to high mountain habitats (690 to 11,400 feet in elevation) (Bradley et al. 2006). The Townsend's big-eared bat primarily occurs in piñon-juniper, mountain mahogany, white fir, blackbrush, sagebrush, salt desert scrub, agricultural lands, and urban habitats (Bradley et al. 2006). This species prefers caves, mines, and buildings that maintain stable temperatures and airflow for nursery colonies, bachelor roosts, and hibernacula (Harvey et al. 1999). It does not make major migrations and appears to be relatively sedentary, not traveling far from summer foraging grounds to winter hibernation sites (Harvey et al. 1999). Its distribution seems to be determined by suitable roost and hibernation sites, primarily caves and mines. This bat is believed to feed entirely on moths (Harvey et al. 1999) and gleans insects from foliage and other surfaces (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

⁴ For MBTA, the USFWS typically places the highest priority on BCC (USFWS 2002).

The Brazilian free-tailed bat (NV-SP) is found throughout Nevada in a wide variety of habitats ranging from desert scrub to high elevation mountain habitats (680 to 8,200 feet in elevation) (Bradley et al. 2006). This species roosts in a variety of structures including cliff faces, caves, mines, buildings, bridges, and hollow trees. Some caves are used as long-term transient stopover roosts during migration (Bradley et al. 2006). The Brazilian free-tailed bat is known to travel long distances to foraging areas and often forages at high altitudes. This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

Feedstock Processing Facility

The affected environment for special status mammals near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Birds

Biorefinery

Birds listed as BCC in the Great Basin Region that are potential breeders near the site include ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, and sage sparrow.

Although suitable nesting and foraging habitat is present within and near the site, the likelihood of nesting ferruginous hawks is very low due to industrial development in the vicinity. Ferruginous hawks are sensitive to disturbance and therefore typically nest away from developed areas (Schmutz 1984; White and Thurow 1985). Burrowing owls may nest near both sites, especially in areas with abandoned small mammal burrows.

Loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, sage thrasher, and sage sparrow are neotropical migrants that may occur near the site from spring through early fall. Their breeding season is approximately April 15 through August 1.

The loggerhead shrike (NV-SPS) is a common resident throughout Nevada. This species is found in open grasslands along valley floors and foothills of the Great Basin. In Nevada, it is commonly found in scrub habitat types such as sagebrush and greasewood. Loggerhead shrikes prefer shrubs or small trees for nesting, but nesting also can occur in piñon-juniper woodlands. This species can be found perching on wire, fences, or poles (National Geographic Society [NGS] 1983). There is suitable nesting and foraging habitat near the site. The potential for this species to occur near the site is considered high.

The sage thrasher (NV-SPS), Brewer's sparrow (NV-SPS), gray vireo (BCC), Virginia's warbler (BCC), and sage sparrow (BCC) are found throughout southern and western Nevada in low elevation habitats such as desert scrub and sagebrush grasslands. These species occur less frequently in mountain shrub habitats. These species nests near the ground under sagebrush and other shrubs (NGS 1983). Suitable nesting and foraging habitat exists near the site. The potential for these species to occur near both sites is considered high.

Special Status Birds

The affected environment for special status birds near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

3.10.2 Environmental Effects – Special Status Species

3.10.2.1 Proposed Action

Federally Listed Species

Biorefinery

Approximately 19.4 acres of sagebrush shrubland habitat would be disturbed as a result of construction of the Biorefinery and 14.4 acres of similar habitat would be disturbed as a result of the construction of the Feedstock Processing Facility. Additionally, approximately 16.8 acres of the Biorefinery site was cleared and graded in 2012 and construction of roadways and other infrastructure has occurred over limited areas nearby. While sage-grouse may utilize sagebrush shrublands in the general region, there have been no documented greater sage-grouse leks sites within the vicinity of either the Biorefinery or Feedstock Processing Facility sites.

Studies have shown that a majority of nesting activity occurs within 2 miles of active leks (NDOW 2004). However, the nearest known active lek site, the Cottonwood Creek Lek, is located approximately 13 miles to the north-northeast of the Feedstock Processing Facility and 12 miles to the north-northwest of the Biorefinery. In addition, there is no designated greater sage-grouse nesting habitat, winter distribution, or summer distribution in Storey County. Greater sage-grouse winter range is located over 3 miles to the north of both the Feedstock Processing Facility and the Biorefinery in Washoe County. Therefore, there are no impacts to greater sage-grouse expected to occur as a result of construction of the Biorefinery or the Feedstock Processing Facility.

Since there are no federally listed plant or wildlife species at either site, no impacts to federally listed species are anticipated.

Feedstock Processing Facility

Effects to federally listed species near the Feedstock Processing Facility site, as described above, would be the same as described for the Biorefinery.

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Impacts to special status wildlife species from surface disturbance would parallel those described in Section 3.9.2, resulting from the long-term removal of approximately 19.4 acres of potential habitat. These impacts would last until the facilities are decommissioned (estimated at 30 years), successful reclamation would be completed, and vegetation would be reestablished. Given that both sites are zoned for industrial development, this impact would probably occur regardless of the facilities. Further, if the facilities are decommissioned it would be likely that another industrial plant would occupy the site.

Feedstock Processing Facility

Effects to state listed, protected, sensitive, and migratory bird treaty act species at the Feedstock Processing Facility site would be the same as described for the Biorefinery. Effects would result from the long-term removal of approximately 14.4 acres of potential habitat.

Special Status Plants

Biorefinery

Since there are no state listed or sensitive plant species at the Biorefinery site, no impacts to special status plant species would be anticipated.

Feedstock Processing Facility

Effects to special status plants near the Feedstock Processing Facility site would be the same as described for the Biorefinery.

Special Status Mammals

Biorefinery

Potentially suitable foraging habitat for the three species (pallid bat, Townsend's big-eared bat, and Brazilian free-tailed bat) exists near the site. Construction and operation of the facility could result in indirect effects to local bat species and their habitat. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 19.4 acres of habitat. However, due to a lack of roosting habitat near the site, no impacts to sensitive bat species are expected. Given that both sites are zoned for industrial development, this disturbance would probably occur regardless of the facility.

Feedstock Processing Facility

Effects to special status mammals would be the same as described for the Biorefinery. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 14.4 acres of habitat.

Special Status Birds

Biorefinery

As discussed in Section 3.10.1 above seven species listed as BCC are potential breeders near the Biorefinery site: ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, and sage sparrow; one species, the sage thrasher, is a state listed special wildlife species but not a BCC.

Construction and operation of the Biorefinery would result in the long-term removal of approximately 19.4 acres of potentially suitable breeding habitat. Noise and human presence also could deter use of the area by these species. During the breeding season (March 15 through July 31), development activities also could result in the abandonment of a nest site or territory or the loss of eggs or young, resulting in the loss of productivity for the breeding season. Development also would fragment habitat as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. However, the degree of these potential effects would depend on a number of variables including the location of the nest site, the species' relative sensitivity, breeding phenology, and possible topographic shielding. As mentioned above in Section 3.8.1 the Biorefinery site is classified as Inter-mountain Basins Big Sagebrush Shrubland. This ecological system occurs throughout the western U.S. and there is nothing special or unique about the project area habitat, particularly in view of its already disturbed nature. Habitat for these species also exists near the Biorefinery site.

Potential impacts to breeding birds from development activities would be minimized during construction by avoiding removal of migratory bird habitat on currently undisturbed lands on the sites to the extent possible between March 15 and July 31. Should removal of habitat be required during this period, Sierra BioFuels would coordinate with the NDOW and the USFWS to determine if surveys and appropriate mitigation, such as buffer zones around occupied nests, may be needed. As a result of these measures and due to the large amount of suitable habitat in the vicinity of the sites and beyond the TRI Center, no impacts to species populations are expected. Finally given that the site is zoned for industrial development, disturbance would probably occur regardless of whether the the IBPE is constructed.

Feedstock Processing Facility

Effects to special status birds near the Feedstock Processing Facility site would be the same as described for the Biorefinery. Construction and operations of the Feedstock Processing Facility would result in the long-term removal of approximately 14.4 acres of potentially suitable breeding habitat.

3.10.2.2 No Action Alternative

A portion of the IBPE sites are already disturbed as a result of filling, clearing, grading, and other surface disturbing activities. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. No effects to special status species would be anticipated as the area is heavily industrialized and to a large extent, both sites have been previously disturbed. Additionally, since both sites are zoned for heavy industrial development, removal of potential habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. The TRI Center is actively seeking tenants to construct industrial or commercial facilities on its property, and will continue to do so in the event that this development does not take place. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.

3.11 Air Quality

3.11.1 Affected Environment

The Feedstock Processing Facility site is located approximately 6 miles east-southeast of Sparks, Nevada, near the entrance to the Lockwood Regional Landfill, and the Biorefinery site is located approximately 7 miles in a direct line to the northeast of the Feedstock Processing Facility site in the TRI Center. No air quality data are collected at the TRI Center. However, there are State and Local Air Monitoring stations that includes data from Reno and Sparks Nevada. Due to the exposure to urban sources of air pollution at this monitoring site, the monitoring results from these stations would be higher than the values at the more remote sites. However, the Reno and Sparks monitoring results provide a conservative indication of air quality data at the two sites and the trends in air quality conditions in the area.

Several years of air quality monitoring data collected in Reno and Sparks, Nevada, from 2003 through 2013 (an incomplete year) are summarized in **Figure 3-11**, which depicts the levels of air quality that are monitored for comparison to the standards. The air quality standards and levels that are analyzed are:

- CO, second highest 1-hour and 8-hour levels;
- Nitrogen dioxide (NO₂), the annual 98th percentile level of the daily maximum 1-hour level;
- Ozone, the 3-year average of fourth-highest daily maximum 8-hour average level;
- PM_{2.5} the 98th percentile of the 24-hour levels;
- PM_{2.5} the 3-year annual average of all values; and
- PM₁₀ , the 3-year average of the 98th percentile of the daily 24-hour levels.

The current air quality levels for the Reno-Sparks area are shown in **Figure 3-11** for the separate pollutants listed above. The area is in attainment status (or attainment/unclassifiable) for all criteria air pollutants. Data show that the levels of CO have been dropping steadily during the 2003-2013 period, due largely to improved emissions from cars and trucks. The 1-hour standard is 40 parts per million (ppm) and the 8-hour standard is 9 ppm. Results indicate that the levels are well below those standards. The U.S. Environmental Protection Agency (USEPA) recently promulgated a 1-hour standard for NO₂ based on the 3-year average of the annual 98th percentile of the daily maximum 1-hour NO₂ level. That standard is 100 parts per billion (ppb). As shown in **Figure 3-11** that level also has dropped over the

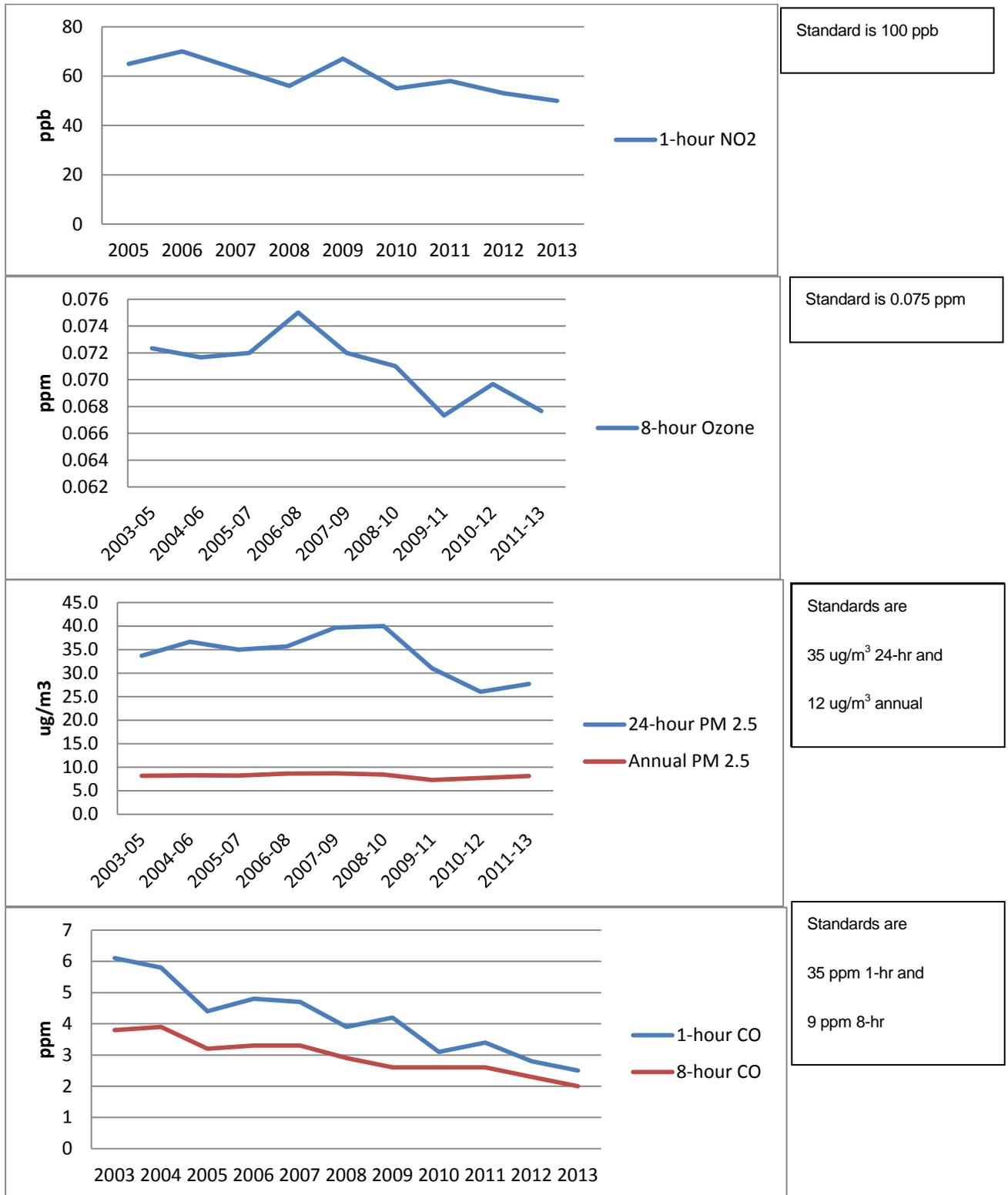


Figure 3-11 Air Quality Measured Values for Reno-Sparks

2003-2013 period, to about 50 ppb. Ozone is formed in the lower atmosphere through the interaction of nitrogen oxides, volatile organic compounds, and sunlight, as well as ambient temperature. The current ozone standard is based on the 3-year average of the 98th percentile of the daily maximum 8-hour average ozone level, and is set at 0.075 ppm. Data at Reno-Sparks indicate that the ozone levels also have continued to decrease throughout the period, and are currently well below the standard. There are two standards for fine particulate matter, or particulate matter (PM) with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}). The annual standard is based on the 3-year average of all levels throughout the year, and the 24-hour standard is based on the 3-year average of the 98th percentile of the daily (24-hour) levels. The annual standard is 12 µg/m³ and the 24-hour standard is 35 µg/m³. The PM_{2.5} data shown in **Figure 3-11** indicate that the current levels are well within the annual standard, and the 24-hour PM_{2.5} levels have decreased substantially since 2008-2010. All data show compliance with the standards at the current time.

Sulfur dioxide (SO₂) also has been measured at the Reno-Sparks monitoring site since 2010. The standard is based on the 3-year average of the annual 99th percentile of the daily maximum 1-hour SO₂ level. During that time the 99th percentile for each year has been 5 or 6 ppb, compared to a standard of 75 ppb. Data also were collected for PM₁₀, but collection has ceased, in view of the collection of PM_{2.5} data. Data from other sites in the region, including Fernley, Fallon and Carson City (not shown here) also indicate that the ambient air quality meets the required state and federal standards.

The USEPA promulgated the federal general conformity rule (40 CFR 51 and 93) to implement Section 176(c) of the Clean Air Act (CAA), which contains requirements that apply specifically to federal agency actions, including actions receiving federal funding, to ensure they are consistent with the CAA and applicable State Implementation Plans (SIP). The purpose of a SIP is an attainment or maintenance demonstration to eliminate or reduce the severity and number of violations of National Ambient Air Quality Standards and to achieve expeditious attainment of such standards. In general, the rule ensures that all criteria air pollutant emissions and volatile organic compounds (VOC) are specifically identified, accounted for and conformed with the SIP. The provisions of the general conformity rule do not apply in attainment areas, and because the proposed IBPE is in an attainment area these provisions would not apply to the proposed IBPE.

3.11.2 Environmental Effects – Air Quality

3.11.2.1 Proposed Action

Stationary Sources

Biorefinery

A *Class II Air Quality Operating Permit to Construct* (Air Permit) was issued to the original developer, IMS Nevada, LLC, under the NDEP-BAPC rules for a minor source permit. The NDEP-BAPC transferred the Air Permit to Sierra BioFuels on April 21, 2008. On September 23, 2009, a Revised Air Permit (No. AP2869-2382) was issued by the NDEP-BAPC to reflect the changes in equipment design, operating efficiencies, and process improvements that Sierra BioFuels has made to the Biorefinery. A revised permit was issued on August 23, 2010. A new application was submitted in response to optimizing plant design, and a final permit was issued on July 1, 2013 (Permit No. AP2869-3306).

Sierra BioFuels submitted an application in February 2014 to modify the current permit, replacing the production of ethanol with the production of SPK fuel. NDEP-BAPC issued a revised air permit on June 25, 2014. The analysis provided in this EA is based on the air quality analyses, emission rates, and impacts associated with the proposed modification, and is consistent with the modified air permit for the Biorefinery.

Feedstock Processing Facility

A stationary source that has the potential to emit less than 100 tpy for any one regulated criteria air pollutant and emit less than 25 tpy total hazardous air pollutants (HAPs) and emit less than 10 tpy of any one HAP is required to obtain Class II Air Quality Operating Permit to Construct from the NDEP-BAPC prior to the commencement of construction. The Feedstock Processing Facility would have a dust collection system that would have the potential to emit approximately 2 tpy of PM. Sierra BioFuels is preparing an application for a Class II Air Permit and expects to submit the application in the second quarter of 2014.

Construction Related Mobile Sources

A wide range of engine sizes and equipment types comprise the typical non-road mobile sources used during the construction of an industrial facility. The emissions generated by pieces of construction equipment would be temporary and result in generally localized impacts on air quality.

EPA has developed a model for estimating emissions and/or emission factors from non-road equipment; NONROAD2008 is the latest version of this model. The model estimates VOC, CO, oxides of nitrogen (NO_x), PM (including PM₁₀ and PM_{2.5}), SO₂, and CO₂. The construction emissions associated with the IBPE were estimated using the highest emission factor for each pollutant for engines from 25 to 500 horsepower (hp), using data for Tier II engines from the USEPA's 2008 non-road emissions database (USEPA 2010)⁵.

The construction of the Biorefinery would be anticipated to take place over a period of 14 months. The construction of the Feedstock Processing Facility would be anticipated to take place over a period of 12 months. Construction activities include a series of activities from site preparation with major earth moving equipment, through excavation, installation of concrete foundations, installation of utilities, hauling and lifting major unit equipment pieces, through cleaning, painting, and site regarding and landscaping. A variety of non-road construction equipment would be used at various points of the construction, including air compressors, dozers, cranes, trucks, forklifts, pumps, and packers. A complete listing of the types of equipment and their associated emission factors, hours of operation, and total emissions for the Biorefinery and the Feedstock Processing Facility can be found in **Appendix B** and **Appendix C**, respectively.

Table 3-1 summarizes the estimated emissions associated with construction of the Biorefinery and the Feedstock Processing Facility. The total emissions associated with the construction of the IBPE are very small and temporary in nature.

Table 3-1 IBPE - Construction Emissions

	NO _x	SO ₂	VOC	PM	CO	CO ₂
Biorefinery	110	15	16	9	65	8,340
Feedstock Processing Facility	22	3	3	2	13	1,642

Fugitive dust emissions also would be generated by construction by moving construction vehicles and by earth moving, handling, and stockpiling activities. These emissions would be short-term, intermittent

⁵ USEPA 2010. *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression-Ignition* Report No. NR-009d. July 2010. Assessment and Standards Division USEPA, Office of Transportation and Air Quality

emissions that result in generally localized impacts to air quality. Sierra BioFuels would employ the following best management practices to minimize fugitive dust generation during construction:

- Water spraying during excavations and earthwork loading operations;
- Intermittent spraying of material piles;
- Haul roads would be maintained and watered;
- Trucks transporting construction materials would be covered;
- Job site speeds would be maintained at 5 miles per hour (mph) or less; and
- Excavated materials would be maintained away from active traffic lanes.

Operations

Biorefinery

The operations of the Biorefinery would require an operating permit to construct under the NDEP-BAPC air quality regulations. Given the anticipated level of the emissions, the Biorefinery would operate under a Class II Operating Permit, as a minor source. The Biorefinery would operate a number of units that emit pollutants to the atmosphere. Emission points consist of both point sources and fugitive (non-point) VOC sources. Specific emission points include the following:

- A synthesis gas gasification unit that generates the syngas;
- Four (4) pulse combustor heaters fueled by natural gas and syngas to provide heat to the gasification unit;
- A SRU, with a separate vent, that removes sulfur from the syngas stream;
- A FT reactor and production plant, including a unit that captures and removes (or vents) CO₂, a distillation column that processes syngas into an SPK biofuel product, a catalytic reactor purge stream, and other processes that clean the syngas and SPK prior to shipment;
- Various storage tanks;
- SPK product loading areas;
- A process flare;
- A “package” utility boiler that provides steam and heat for use in the Biorefinery;
- Storage silos for chemicals used to treat the product and intermediates;
- A dust collector system on the feedstock supply unloading and handling areas; and
- Emergency diesel engines that would be used for power generation or fire water pumps.

Table 3-2 lists the total emissions of the criteria air pollutants as well as the major hazardous air pollutants that would be emitted by the operations of the Biorefinery’s emissions units as designed for the proposed permit revision. Emission rates were based on standard reference databases including USEPA’s Compendium of Emission Factors from Stationary Sources (Referred to as AP-42) and data provided by vendors. Emissions of hazardous air pollutants were based on AP-42 factors, and emissions for greenhouse gases were based on data provided in 40 CFR 98 Subpart A and on an engineering analysis of the syngas and purge gas streams. Particulate emission rates for baghouses were based on proposed design criteria related to the specification of 0.005 grains/dry standard cubic foot and on the projected baghouse vent rate for the designed units.

The table provides a total of all emissions from all sources and shows that all emissions of all individual criteria pollutants would be less than 100 tpy.

Table 3-2 Biorefinery - Facility-wide (Stationary Source) Potential to Emit

Pollutant	Potential to Emit (pounds/hour)	Potential to Emit (tpy)
Total PM	5.39	8.38
Particulates as PM ₁₀	5.39	8.38
SO ₂	8.27	2.99
CO	40.51	44.41
NO _x	34.65	20.77
Volatile Organic Compounds	17.95	38.31
Lead	--	--
Hazardous Air Pollutants (Specify Each Pollutant)		
N-Hexane	0.249	1.09
Formaldehyde	0.014	0.46
Acetaldehyde	0.002	<0.001
Benzene	0.010	0.002
Toluene	0.004	0.002
Naphthalene	<0.001	<0.001
Xylenes	0.003	<0.001
Acrolein	<0.001	<0.001
H ₂ S	0.37	1.61
Other Regulated Pollutants (Specify)	n/a	n/a

Feedstock Processing Facility

The operation of the Feedstock Processing Facility would require an operating permit to construct under the NDEP-BAPC air quality regulations. Given the anticipated level of the emissions, the Feedstock Processing Facility would operate under a Class II Operating Permit, as a minor source. The Feedstock Processing Facility operational emissions would be associated with 1 baghouse that controls the MSW handling and processing operations. Current design is for a unit with a flow rate of 10,000 actual cubic feet per minute (acfm) and a grain loading effectiveness of 0.005 grains per dry standard cubic feet (gr/dscf).

Table 3-3 lists the total emissions of the criteria air pollutants as well as the major hazardous air pollutants that would be emitted by the operations of the Feedstock Processing Facility's dust collection system. The table shows emissions of all individual criteria pollutants would be less than 100 tpy. No Hazardous Air Pollutants would be emitted from this facility.

Table 3-3 Feedstock Processing Facility – Facility-wide (Stationary Source) Potential to Emit

Pollutant	Potential to Emit (pounds/hour)	Potential to Emit (tpy)
Total PM	0.47	2.05
Particulates as PM ₁₀	0.47	2.05
Hazardous Air Pollutants (Specify Each Pollutant)	n/a	n/a
Other Regulated Pollutants (Specify)	n/a	n/a

Ambient Air Quality Modeling

According to NDEP-BAPC classifications for operating permits, the anticipated emission rates from the Biorefinery and the Feedstock Processing Facility are each a Class II (minor source) for air emissions. NDEP-BAPC would evaluate the two applications and associated emissions and conduct a technical review to demonstrate compliance with ambient air quality standards, as part of issuing the air quality permit for the facilities.

The air quality related impacts from the Biorefinery and the Feedstock Processing Facility were evaluated using the emission rates associated with each emission unit, along with the source release characteristics. Modeling was conducted using the USEPA-approved guideline model AERMOD, and meteorological data provided by NDEP. Methodologies that were used are the standard default settings related to the vegetation/ground cover of the area, the rural settings, building profile input data, topographic elevations, and wind profiles. The modeling evaluation provides both the short-term (24-hour and less) and long-term (annual average) projected concentrations at the maximum receptor around each facility. The model results show that all impacts would be below the established ambient air quality standards under normal operations. The air permit application would include emissions modeling that addressed air quality related impacts from operating the IBPE.

Table 3-4 provides a summary of the Biorefinery's modeled impacts of the emissions, and includes background concentrations provided by NDEP-BAPC. It lists the individual pollutants that were evaluated, along with the maximum impact at any of the modeled receptors for each pollutant and for each time period. All short-term impacts reflect the maximum concentration for the applicable time period. The results of this modeling analysis demonstrate that the Biorefinery would not cause or contribute to an exceedence of an ambient air quality standard.

Air quality impacts resulting from the operations of the Feedstock Processing Facility were modeled using the identical meteorological data that are being used for the Biorefinery. Emission rates were calculated for the only sources at the site, which are expected to be the baghouse that controls the sorting and bagging operations, using the design data provided for these operations. The maximum impacts are shown in **Table 3-4** along with a comparison to the applicable standards.

A review of nearby receptors indicated that there are no sensitive receptors (schools, hospitals or care facilities, recreation areas, ecological areas, or other sensitive areas) within the impact area of emissions from the Biorefinery or the Feedstock Processing Facility. Additionally since the impacts of the regulated pollutants are within the Nevada Ambient Air Quality Standards, there are anticipated to be no effects on any sensitive populations.

Greenhouse Gases and Global Climate Change

While the scientific understanding of climate change continues to evolve, the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report has stated that warming of the Earth's climate is unequivocal, and that warming is very likely attributable to increases in atmospheric greenhouse gases (GHGs) caused by human activities (anthropogenic) (IPCC Climate Change 2007: Synthesis Report [IPCC 2007]). The IPCC 2007 Report indicates that changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts are linked to changes in the climate system, and that some changes may be irreversible.

Construction of the IBPE would result in minor emissions totaling 9,982 tpy of carbon dioxide equivalent (CO₂e) of GHGs emitted as a result of activities related to construction and transportation (see **Appendices A and B**).

Table 3-4 Biorefinery – Maximum Predicted Ambient Air Quality Impacts Compared to Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$) ¹	Nevada/National AAQS ($\mu\text{g}/\text{m}^3$)
NO ₂ ²	Annual	19	100
	1-hour	120	188
SO ₂	1-hour	10	196
	3-hour	27	1,300
	24-hour	10	365
	Annual	4	80
PM ₁₀	24-hour	43	150
	Annual ³	18	50
PM _{2.5} ⁴	24-hour	22	35
	Annual	9	12
CO	1-hour	529	40,500
	8-hour	203	10,500
Ozone	1-hour ^{5,6}	28	147
H ₂ S ⁷	1-hour	7.6	112

¹ Maximum predicted impact includes background concentrations for NO₂, SO₂, and PM₁₀.

² NO₂ concentration assume 100 percent conversion from NO_x to NO₂.

³ Annual PM₁₀ is a state only standard.

⁴ No background concentration available for PM_{2.5}.

⁵ Ozone concentrations predicted by Scheffe Method, as described in the NDEP regulations.

⁶ Represents the 1-hour ozone standard (in Nevada regulations). The modeled impact of 28 $\mu\text{g}/\text{m}^3$ for 1-hour assured compliance with the federal ambient air quality standard of 75 ppb or 147 $\mu\text{g}/\text{m}^3$ on an 8-hour fourth-highest impact.

⁷ H₂S standard is state-only.

Operation of the IBPE would result in GHG emissions. The GHG emissions from the Biorefinery would result from the combustion of both natural gas and the purge gas (syngas) product stream. The Biorefinery also removes CO₂ from the syngas through an acid gas scrubber system and a process vent to the atmosphere. A significant portion of the purge gas combustion CO₂ and the scrubber vent CO₂ would be made up of the renewable (non-fossil-based) portion of the MSW feedstock, thereby producing non-fossil or biogenic CO₂. The analysis of the feedstock and calculations from these emission units show that of the purge gas and syngas generated CO₂, approximately 79.7 percent would be biogenic. Combined with the CO₂ generated by natural gas combustion, the Biorefinery generates a total of 262,000 tpy of CO₂e, with a total of 93,000 tpy of fossil-based CO₂ and 169,000 tpy of biogenic based CO₂e.

Operations of the Feedstock Processing Facility would not result in direct GHG emissions because there would be no combustion sources at the facility.

Once operational, the Biorefinery would use sorted MSW to generate syngas to produce SPK fuel. A separate purge gas stream generated at the Biorefinery would be used as fuel in the utility boiler to generate process steam for use on in the Biorefinery. The remainder of the syngas would be converted into SPK fuel. A comparative calculation of GHG emissions, in CO₂e was made between the Biorefinery-produced biofuel to determine the annual net savings in CO₂e GHG. In ultimately combusting the SPK fuel as a replacement for fossil fuels, the total annual CO₂ emissions would be 103,000 tpy, comprised of

79.7 percent CO₂ from renewable feedstock. This value is approximately 0.0015 percent of the total annual 6,526 million metric tons of GHG emissions in the U.S. in 2012, and is therefore not a significant contribution. This effectively replaces 82,000 tpy of fossil-based GHG emissions from the combustion of conventionally produced SPK fuels. This IBPE could serve as a corner-stone commercial-scale utilization of a technology that results in the reduction of GHG emissions from MSW landfills, enhances the use of renewable resources, and replaces the combustion of fossil fuels.

Federal regulations require that landfill-generated gas (including methane) at large MSW landfills be either flared or recovered for energy purposes (40 CFR 60 Subparts Cc and WWW). The use of the MSW feedstock to produce a biofuel, ultimately combusted as an energy resource, would essentially have no net effect on total global GHG emissions, because the landfill-generated carbon-based gases (CO₂ and CH₄ mainly) would enter the atmosphere as CO₂ in either case.

The release of anthropogenic GHGs and their potential contribution to global warming are inherently cumulative phenomena. GHG emissions from the Biorefinery are relatively small compared to the 8,026 million tons (7,282 million metric tonnes) of CO₂-equivalent GHGs emitted in the U.S. in 2007 (Energy Information Administration, Report # DOE/EIA-0573 [2007]) and the 54 billion tons (49 billion metric tonnes) of CO₂e anthropogenic GHGs emitted globally in 2004 (IPCC 2007). The GHG emissions from the Biorefinery in combination with past and future emissions from all other sources would contribute incrementally to the climate change impacts described above.

The use of the MSW feedstock also would lead to a reduction in methane emissions from the decomposition of organic matter and its emission through the landfill covers, not captured by any control device. Methane is a powerful GHG (1 ton of methane has the same global warming potential as 25 tons of CO₂)⁶ and therefore the project would lead to a substantial reduction in GHGs as measured by CO₂e.

At the present time, there is no methodology that would allow DoD to estimate the specific impacts (if any) this increment of climate change would produce in the vicinity of the IBFE or elsewhere. The process to be used would not cause an impact on food availability and price because food crops would not be a part of the feedstock.

3.11.2.2 No Action Alternative

Given that the Biorefinery and Feedstock Processing Facility sites are zoned for industrial development, emissions from existing developments would continue and new emissions would be created as other additional developments are approved. Fugitive dust would continue to occur as travel on unpaved roads and construction of other facilities nearby continues. The benefits of avoided emissions and other air pollutants by replacing fossil-fuel-fired electric generation may not occur when the developments are undertaken.

3.12 Cultural Resources

3.12.1 Affected Environment

Cultural resources include “historic properties” as defined in the NHPA of 1966, as amended, “archaeological resources” as defined in the ARPA of 1979. Additionally, cultural resources include “cultural items” as defined in the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. Cultural resources include, but are not limited to, the following broad range of items and locations:

- Archaeological materials (i.e., artifacts) and sites that date to the prehistoric, historic, and ethnohistoric periods currently located on, or buried beneath, the ground surface;

⁶ See 40 CFR 98 Subpart A.

- Standing structures that have an important technological, architectural, or local significance;
- Cultural and natural places, select natural resources, and sacred objects that have importance for Native Americans; and
- American folk life traditions and arts (USDOE 2006).

3.12.1.1 Regulatory Framework

Federal historic preservation legislation provides a legal environment for documentation, evaluation, and protection of cultural resources that may be affected by federal or private undertakings operating under federal license, with federal funding, or on federally managed lands. These include, but are not limited to, the NHPA, ARPA, and Archaeological and Historic Preservation Act of 1974. EO 11593 also provides necessary guidance on protection and enhancement of cultural resources.

The NHPA requires federal agencies to take into account the effects of their actions on properties listed on or eligible for listing on the National Register of Historic Places (NRHP). Section 106 of the NHPA establishes a four-step review process by which cultural resources are given consideration during the evaluation of proposed undertakings. The regulations require that federal agencies initiate Section 106 early in the project planning, when a broad range of alternatives can be considered (36 CFR 800.1[c]).

The effects of federal undertakings on properties of religious or cultural significance to contemporary Native Americans, including traditional cultural properties, are given consideration under the provisions of the AIRFA, NAGPRA, and recent amendments to the NHPA. As amended, the NHPA now integrates Indian tribes into the Section 106 compliance process and also strives to make the NHPA and NEPA procedurally compatible.

Section 106 of the NHPA requires that federal agencies take into account the effect of an undertaking on historic properties and provide the Advisory Council on Historic Preservation an opportunity to comment. Historic property, as defined by the regulations implementing Section 106, means "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the NPS." The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the NRHP criteria.

Potential impacts to historic properties are assessed using the "criteria of adverse effect" (36 CFR 800.5[a] [1]), as defined in the implementing regulations for the NHPA. "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." Adverse effects include not only the physical disturbance of a historic property, but also may include the introduction, removal, or alteration of various visual or auditory elements, which could alter the traditional setting or ambience of the property.

3.12.1.2 Eligibility Criteria for Listing Cultural Resources on the NRHP

The NRHP, maintained by the National Park Service (NPS) on behalf of the Secretary of the Interior, is the nation's inventory of significant cultural resources. The NPS has established three main standards that a resource must meet to qualify for listing on the NRHP (age, integrity, and significance). To meet the age criteria, a resource generally must be at least 50 years old. To meet the integrity criteria, a resource must "possess integrity of location, design, setting, materials, workmanship, feeling, and association" (36 CFR 60.4). Finally, a resource must be significant according to one or more of the following criteria:

- Be associated with events that have made a significant contribution to the broad patterns of U.S. history (Criterion A);
- Be associated with the lives of persons significant in U.S. history (Criterion B);
- Embody the distinctive characteristics of a type, period, or method of construction or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- Have yielded, or may likely yield, information important in prehistory or history (Criterion D) (NPS 1995).

3.12.1.3 Cultural Overview

Traditionally, the Northern Paiute inhabited eastern California, western Nevada, and southeast Oregon. Their pre-contact lifestyle was well adapted to the harsh desert environment in which they lived. Each tribe or band occupied a specific territory, generally centered on a lake or wetland that supplied fish and waterfowl. They lived a seasonal semi-nomadic life style. In the winter, they occupied dome-shaped, mat-covered houses, while in the summer they utilized windbreaks or sun shades. Subsistence strategies included hunting, plant gathering, and fishing. Pine nuts, various seeds, roots, and berries were important plant resources. Communal hunting utilizing traps or corrals were used for large game such as antelope, deer, and desert bighorn sheep. Small game included rabbits, marmots, ground squirrels, grouse, waterfowl, and insects (e.g., grasshoppers) (Fowler and Liljeblad 1986).

Relations among the Northern Paiute bands and their Western Shoshone neighbors generally were peaceful. In fact, they were culturally similar with no clear distinction between the two. However, relations with the Washoe people, who were culturally and linguistically very different from the Northern Paiute and Western Shoshone, were not so peaceful (Bengston 2003).

Contact between the Northern Paiute and Euroamericans came in the early 1840s, although the first contact may have occurred as early as the 1820s. Although the Northern Paiute had already started using horses, their culture was otherwise unaffected by Euroamerican influences at that time. As Euroamerican settlement of the area increased, several violent confrontations occurred, including the Pyramid Lake War of 1860, Owens Valley Indian War 1861-1864, Snake War 1864-1868, and the Bannock War of 1878. These conflicts generally started as disagreements between settlers and Paiutes over property, retaliation by one group against the other, or a result of the depletion of the tribe's traditional food base (Bengston 2003).

The Malheur Reservation was established in eastern Oregon for the Northern Paiute on September 12, 1872, with the intent of concentrating the Indians of the area on this reservation. However, the strategy failed. Due to the distance of the reservation from the traditional lands of the Paiute, and poor conditions on the reservation, many Northern Paiute refused to relocate, and those that did soon left. The Paiute held onto their traditional life styles as long as possible, but when the depletion of their traditional resources made that impossible, they took jobs on white farms and ranches, or in cities, and established small Indian colonies (Bengston 2003). Later, large reservations were created at Pyramid Lake (1874) and Duck Valley (1877), but by that time the pattern of small colonies near cities or farm districts had been established. Starting in the early 20th century, the U.S. government began granting land to these colonies, and under the Indian Reorganization Act of 1934, these colonies gained recognition as independent tribes.

The Reno-Sparks Indian Colony, which is located approximately 5 to 15 miles west of the proposed IBPE sites, is a federally recognized Indian Tribe located near Reno, Nevada (<http://www.rsic.org>). The Colony was established in the early 1900s and formed a more formal tribal government in 1935 under the Indian Reorganization Act. Membership consists of over 900 members from three Great Basin tribes: Paiute, Western Shoshone, and Washoe. The reservation lands consist of the original 28-acre

residential Colony located in downtown Reno and the 1,960-acre Hungry Valley Reservation located 19 miles north of the downtown Colony.

The IBPE would be located in Storey County, where, in 1859 gold was discovered, prompting a rush from the mining districts of California. Soon after, a rich gold strike (the Comstock Lode, containing 57 percent silver, 42 percent gold) was discovered in Gold Hill by “Old Virginia” H.T.P. Comstock. With the Comstock Lode, the area became known as “The Richest Place on Earth.” Storey was made a county by an act of the first territorial legislature on November 25, 1861. It was named after Captain Edward Faris Storey, one of the first residents of Virginia City and a commander in the Pyramid Lake War of 1860. Mining declined over the next several decades and has since given way to tourism as the leading factor in the county’s economy (<http://www.regionaldatacenter.com/RDC/StoreyCounty/index.aspx>).

3.12.1.4 Cultural Resources Investigations

Biorefinery

On November 19-20, 2008, Summit Envirosolutions, Inc. (Summit) conducted a Class I files search through the Nevada Cultural Resources Information System and Nevada State Museum (Summit 2008). The files search was conducted to identify any previously conducted cultural resource inventories or previously recorded cultural resources within a 1-mile radius of the site. Historic maps, General Land Office plats, and the Nevada Division of State Lands database also were examined for possible historic features (e.g., roads, ditches, trails, structures) in the files search study area.

No cultural resources were found on the Biorefinery site. Within 1 mile of the Biorefinery site, a cultural resources inventory was conducted that identified one archaeological site and six isolated finds. The archaeological site is a small prehistoric lithic scatter consisting of four flakes. The isolated finds include four prehistoric flakes, one historic canning lid band, and a historic cadastral marker (a metal marker used to create, mark, and define, retrace, resurvey and reestablish the boundaries and subdivisions of the public lands of the U.S.). None of these previously recorded cultural resources are eligible for the NRHP. With the exception of two unimproved two-track roads, no historic features were identified in the files search study area. The literature search and the previous survey near the Biorefinery site indicate that the potential for undiscovered significant cultural resources on and near the site is very low. The Biorefinery site is located outside the foothills of the Virginia Range, which is rich in both prehistoric and historic-period resources, and is situated in an area of desert pavement with low shrubby vegetation where the potential for intact significant cultural resources is limited. In addition, since the Biorefinery would be sited on a tract of land that already has been developed for the TRI Center, there is a low probability of any intact resources remaining at the site. The Biorefinery site has been modified through extensive grading and filling of the surface terrain; and service utilities, including roadways and rails, are already constructed to serve the Biorefinery site.

Feedstock Processing Facility

On December 16, 2013, Summit examined the National and Nevada Registers of Historic Places, General Land Office plats, historic maps, and other records to identify any previously conducted cultural resources inventories or previously recorded cultural resources within 1 mile of the proposed location of the Feedstock Processing Facility (Summit 2013). The records indicate that no previously conducted cultural resources inventories or previously recorded cultural resources were found on the Feedstock Processing Facility site. However, a total of 10 inventories and eight sites are located within a 1-mile radius. The eight sites consist of two prehistoric lithic scatters, one prehistoric quarry, one prehistoric rock art/lithic scatter, one historic telegraph line, one historic refuse scatter, the historic Southern Pacific Railroad, and a multi-component site consisting of a prehistoric lithic scatter and historic debris. Of the eight sites, three are eligible for the NRHP (prehistoric rock art/lithic scatter, Southern Pacific Railroad, telegraph line), one is unevaluated (historic refuse scatter), two are not eligible (prehistoric lithic scatter, multi-component site), and no information is available on the remaining two sites.

3.12.1.5 Tribal Consultation and Coordination

On February 10, 2014, eight letters were sent to Native American Tribes in Nevada that have an historical interest in Storey County, Nevada (see Section 6.2.3). An opportunity was extended to the Tribes to engage in government to government consultation on the proposed IBPE. A description of the Proposed Action and a map was provided with the letters. No expression of interest in consultation was received. Two separate letters in response to this request were provided, but no Tribes expressed an interest in consultation on the Proposed Action.

A second letter was sent to the Tribes on June 6, 2014, and a response was received from the Fallon Paiute Shoshone Tribe indicating that the Tribe did not have an immediate concern with the proposed project. Copies of both letters and the Fallon Paiute-Shoshone Tribe response are included in **Appendix E**.

3.12.2 Environmental Effects – Cultural Resources

3.12.2.1 Proposed Action

Biorefinery

Since no cultural resources have been identified at the Biorefinery site and the site has been heavily disturbed as a result of previous clearing and grading activity and nearby industrial development, no direct impacts to cultural resources are anticipated. Activities associated with constructing the Biorefinery could possibly adversely affect undiscovered cultural resources. If a cultural resource would be encountered during construction, construction would cease within the vicinity of the discovery until the Nevada SHPO and interested Tribes can evaluate the discovery. Construction would not proceed until authorized by the Nevada SHPO. Treatment of any discovered cultural material would be handled in accordance with Nevada SHPO policy.

If construction or other Sierra BioFuels personnel discover what they believe to be human remains, funerary objects, or items of cultural patrimony that appear subject to NHPA Section 106 become revealed, construction would cease within the vicinity of the discovery, the finding would be kept secure until consultation under 36 CFR §800.13. Suspected human remains also require immediate notification of local law enforcement officials. Treatment of any discovered human remains and associated funerary objects would be handled in accordance with the provisions of applicable federal, Nevada and local law. Construction will not resume until the SHPO has issued a notice to proceed.

On December 19, 2013, the Nevada SHPO was advised of a proposed construction and operation of the IBPE including the Biorefinery and that such project would have no adverse effect on historic properties (see letter at **Appendix F**). On January 15, 2014, the Nevada SHPO concurred with the determination (see **Appendix F**).

Feedstock Processing Facility

As a result of the records search, no previous conducted cultural resources inventories or previously recorded cultural resources were identified within the proposed location of the Feedstock Processing Facility. However, 10 previously conducted inventories and 8 previously recorded sites were identified within a 1-mile radius of the proposed location. Of the 8 sites, 3 are eligible for the NRHP, 1 is unevaluated, 2 are not eligible, and no information is available for the remaining 2 sites.

If construction or other Sierra BioFuels personnel discover what they believe to be human remains, funerary objects, or items of cultural patrimony that appear subject to NHPA Section 106 become revealed, construction would cease within the vicinity of the discovery, the finding would be kept secure until consultation under 36 CFR §800.13. Suspected human remains also require immediate notification of local law enforcement officials. Treatment of any discovered human remains and associated funerary

objects would be handled in accordance with the provisions of applicable federal, Nevada and local law. Construction will not resume until the SHPO has issued a notice to proceed.

Based on the records search and the location of the proposed Feedstock Processing Facility site in a heavily disturbed area, the potential for cultural resources within the proposed location is low. The Southern Pacific Railroad and adjacent telegraph line along the Truckee River are eligible for the NRHP; however, the Feedstock Processing Facility would have no visual impact to these resources. Other modern development in the area, including a large housing and industrial complex, already has affected the setting and historic feeling of the area.

On December 19, 2013 the Nevada SHPO was advised of the proposed construction and operation of the IBPE including the Feedstock Processing Facility and that such project would have no adverse effect on historic properties (see letter at **Appendix F**). On January 15, 2014, the Nevada SHPO concurred with the determination (see **Appendix F**).

3.12.2.2 No Action Alternative

Given that the IBPE sites are zoned for heavy industrial development, impacts to any possible cultural resources at or near the sites would continue from existing and new developments proposed within and adjacent to the TRI Center or the area surrounding the Lockwood industrial area.

3.13 Socioeconomic Impacts and Environmental Justice

3.13.1 Affected Environment

Socioeconomics

Biorefinery

The Biorefinery site is located in an industrial park that is isolated from other communities. The Biorefinery site is east of Sparks, Nevada, and north of the Virginia City community, which is not directly accessible from the TRI Center. Due to the isolated and unpopulated nature of the area, there is no accurate depiction of socioeconomic data for the site; however, as the majority of the work force would be expected to come from the local population centers of Reno-Sparks and Fernley, economic characteristics of these areas and their associated counties are detailed in **Table 3-5**. Of the potentially affected population centers, the city of Sparks recorded the highest median household income and the city of Fernley recorded the lowest percentage of persons living below the poverty level. The U.S. Census Bureau and Bureau of Labor Statistics group the Biorefinery site and TRI Center with the City of Sparks.

Feedstock Processing Facility

The Feedstock Processing Facility affected environment for socioeconomics is the same as described for the Biorefinery.

Table 3-5 Income Characteristics for the Project Area

Parameter	Nevada	Washoe County	Storey County	City of Reno	City of Sparks	City of Fernley
Median household income, 2008-2012	\$54,083	\$53,994	\$62,561	\$47,814	\$53,508	\$50,213
Personal per capita money income, 2008-2012	\$27,003	\$29,024	\$33,043	\$26,945	\$25,376	\$21,770
Persons below poverty, 2008-2012	14.2 percent	14.7 percent	8.6 percent	17.7 percent	13.4 percent	9.2 percent

Source: U.S. Census Bureau 2014.

Environmental Justice

Biorefinery

The Biorefinery site is located in industrial area that is isolated from other communities. There are no residences, churches, schools, cultural centers, parks, or playgrounds within 5 miles of the Biorefinery site. There is no foot traffic in the area. The Biorefinery site is east of Sparks, Nevada, and north of the Virginia City community, which is not directly accessible from the TRI Center. The Biorefinery site is within Storey County, which, as detailed in **Table 3-6**, recorded estimated 2012 minority populations that were below the state of Nevada average. The cities of Reno, Sparks, and Fernley also recorded estimated 2012 minority populations that were below the state of Nevada average. **Table 3-5** notes that the city of Reno was the only local population center to have persons below the poverty level higher than the state average. Ultimately, the project would generate income within the affected communities if they supply workers and services, potentially benefitting minority communities. Moreover, because the proposed project is not located in large communities or urban areas, there is no evidence that the project would have a disproportionately high adverse effect on minority and low-income populations.

Feedstock Processing Facility

The Feedstock Processing Facility affected environment for environmental justice are similar as described for the Biorefinery. The Feedstock Processing Facility site is located in industrial area that is isolated from other communities. There are no residences, churches, schools, cultural centers, parks, or playgrounds within 1.5 miles of the site. There is no foot traffic in the area. The Feedstock Processing Facility site is east of Sparks, Nevada, and 15 roadway miles west of the Biorefinery site.

Table 3-6 Population and Racial Composition, 2012 (estimate)

	2012 Population Estimate	White (not Hispanic or Latino) (%)	Black (%)	American Indian, Alaska Native, Native Hawaiian (%)	Asian (%)	Two or More Races (%)	Hispanic or Latino (%)
Nevada	2,754,354	52.9	8.9	2.3	7.9	3.8	27.3
Washoe County	429,908	65.1	2.6	2.8	5.5	3.2	23.0
Storey County	3,935	86.2	1.3	2.4	2.0	2.0	6.7
City of Reno	231,027	62.5	2.9	2.0	6.3	4.2	24.3
City of Sparks	92,183	61.4	2.6	1.8	5.9	4.0	26.3
City of Fernley	19,093	77.6	1.0	2.2	2.0	4.6	14.4

Source: U.S. Census Bureau 2014.

3.13.2 Environmental Effects – Socioeconomic Impacts

3.13.2.1 Proposed Action

Socioeconomics

Biorefinery

The Biorefinery would add additional employment during construction and operation (up to 32 full-time jobs), and socioeconomic benefits to the surrounding areas would likely occur. Businesses and work forces in the nearby communities of Sparks and Reno, Nevada, would be the likely benefactors. Due to the unpopulated and remote nature of the TRI Center and surrounding industrial area, no other socioeconomic effects would occur that would affect existing communities or populations.

Feedstock Processing Facility

Socioeconomic effects from the Feedstock Processing Facility would include 42 additional full-time jobs at this site as part of operations, and impacts would be the same as described for the Biorefinery.

Environmental Justice

Biorefinery

Since there are no communities in proximity to the Biorefinery site, there are no environmental justice population concerns present.

Feedstock Processing Facility

Environmental Justice effects from the Feedstock Processing Facility would be the same as described for the Biorefinery.

3.13.2.2 No Action Alternative

Socioeconomics

Without the IBPE, socioeconomic benefits as a result of the IBPE would not occur; however, employment may be added as a result of other proposed developments at the TRI Center.

Environmental Justice

In view of the isolated nature of the IBPE there would not be any environmental justice concerns if the IBPE would not be built, or if the sites are used for other industrial purposes.

3.14 Aesthetics

3.14.1 Affected Environment

Biorefinery

The designed visual character of the Biorefinery has been highly modified from the natural state. Modifications to the natural setting include roads, rail spurs, utility infrastructure, and industrial developments. In addition to the substantial human modifications the overall existing scenic quality of the landscape also is considered low because it lacks a variety and contrast in natural features, landforms, and vegetation. Given that the site is located on the interior of an industrial center or adjacent to a landfill, sensitive visual receptors are limited to other industrial developments at the TRI Center and the Lockwood Regional Landfill. There are no residences within the viewshed.

Feedstock Processing Facility

The presence of the nearby landfill has already modified the aesthetics of the site for the Feedstock Processing Facility. A nearby highway would be used to deliver MSW to the landfill, and those operations would not change as a result of locating the Feedstock Processing Facility at this site. The surrounding topography in the vicinity of the site would shield the Feedstock Processing Facility from observation from I-80 and nearby residences in the community of Lockwood.

3.14.2 Environmental Effects – Aesthetics

3.14.2.1 Proposed Action

Aesthetics/Visual

Biorefinery

Visual effects resulting from the development of the Biorefinery would introduce new elements into the visual landscape, and would alter the form, line, color, and texture that characterize the existing

landscape. The proposed facilities would result in the introduction of structural elements that are visually similar to existing conditions and landscape character (i.e., a modified landscape with varying levels of industrial infrastructure). As such, the visual contrast associated with the Biorefinery compared to the surrounding area would be low and would not attract the attention of the casual observer.

The Storey County Zoning Ordinance §17.37.080 specifies that buildings within the I-2 Heavy Industrial Zone should not have a height greater than 75 feet and a special use permit would be required if the facility exceeds these limits. The Biorefinery design does not include any buildings that would exceed the zoning ordinance building height limitations, however, the Storey County Planning Commission authorized an exception to allow a building up to 90 feet tall, if needed. Travelers on I-80 and other areas outside the project area would see other industrial developments that are closer to the interstate, but would not see the Biorefinery as it would be shielded from viewers by surrounding topography. Since the Biorefinery would be located in an industrial park with low scenic quality, visual impacts of a building in excess of 75 feet would be minimal.

Feedstock Processing Facility

Given that the Feedstock Processing Facility site is impacted by the existing landfill operations, the addition of one building and nearby infrastructure would not lead to an effect on the visual character of the site. Impacts to the affected environment on aesthetics is similar as described for the Biorefinery.

3.14.2.2 No Action Alternative

Given that IBPE sites are zoned for heavy industrial development, changes to the visual character of the landscape that alter the form, line, color, and texture would likely occur regardless of the facilities as a result of existing and new developments proposed within the TRI Center industrial park and adjacent industrial lands.

3.15 Noise and Odors

3.15.1 Affected Environment

Biorefinery

Noise is often defined as “unwanted sound.” Sounds are described as noise if they interfere with an activity or disturb the person hearing them. Sound levels fluctuate with time depending on the sound source audible at a specific location. Additionally, the degree of annoyance associated with certain sounds can vary by time of day, depending on other sound sources affecting a receiver and the activities of the receiver. For example, the interruption of sleep can be very annoying.

The Biorefinery would be located within an existing industrial park, with the main sources of noise associated with industrial operations, construction of new buildings, and road traffic. **Table 3-7** details noise levels of the different types of construction equipment at various distances. There are no sensitive noise receptors near the site, since the closest residence is approximately 6 miles in a direct line northwest in the community of Lockwood.

The Storey County Zoning Ordinance §17.12.100 specifies that within I-2 Heavy Industrial zones “noise, smoke, odor, gases, or other noxious nuisances shall be controlled so as not to become objectionable, or adversely affect the properties in the vicinity, and shall not be detrimental to the public health, safety and welfare.”

Table 3-7 Noise Levels at Various Distances from Typical Construction Equipment

Construction Equipment	Noise Level ¹ at Distances (dBA)					
	50 feet	100 feet	200 feet	400 feet	800 feet	1,600 feet
Bulldozer	85	79	73	67	61	55
Concrete Mixer	85	79	73	67	61	55
Concrete Pump	82	76	70	64	58	52
Crane, Derrick	88	82	76	70	64	58
Crane, Mobile	83	77	71	65	59	53
Front-end Loader	85	79	73	67	61	55
Generator	81	75	69	63	57	51
Grader	85	79	73	67	61	55
Shovel	82	76	70	64	58	52
Truck	88	82	76	70	64	58

¹ The equivalent steady-state sound level that contains the same varying sound level during a 1-hour period.

Source: HMMH 2006.

Feedstock Processing Facility

The Feedstock Processing Facility affected environment for noise and odors is similar as described for the Biorefinery. The Feedstock Processing Facility would be located near adjacent to a landfill, with the main sources of noise associated with industrial operations and road traffic. There are no sensitive noise receptors near the site, since the closest residence is approximately 1.5 miles in a direct line northwest in the community of Lockwood.

3.15.2 Environmental Effects – Noise and Odors

3.15.2.1 Proposed Action

Biorefinery

Noise and odors are not anticipated to be an issue for surrounding landowners, as surrounding land-use in the area also is heavy industrial. As required in the Special Use Permit and by Storey County Code Chapter 8.04.020, the noise must be limited to property boundary noise levels of 84 decibels for an octave range of 500 to 1,800 cycles per second. As detailed in **Table 3-7**, most construction noise is less than 84 decibels at 50 feet from construction activities. Sierra BioFuels is required under its Special Use Permit to submit a test, confirming the level of noise during operations that meets with stipulated requirement.

The baled feedstock would be wrapped with polyethylene film suitable for outdoor storage so there would be no exposure of potential odors from the feedstock. The feedstock debaling operations would take place in an enclosure to minimize any exposure to ambient air. H₂S would be emitted by the Biorefinery in trace amounts, but given the distance to nearby receptors no impacts from odors would be expected.

Feedstock Processing Facility

The noise and odor effects from the Feedstock Processing Facility are similar as described for the Biorefinery's feedstock storage and handing process. The feedstock processing operations would be performed in an enclosed building at the Feedstock Processing Facility, which would inhibit the propagation of noise and odors from the process operations.

3.15.2.2 No Action Alternative

Given that the IBPE sites are zoned for heavy industrial development, industrial noise would likely occur regardless of the IBPE as a result of existing and new developments proposed within the TRI Center and the area surrounding the Lockwood industrial area.

3.16 Public Health and Safety

3.16.1 Affected Environment

Biorefinery

A Phase I Environmental Site Assessment (AECOM 2008 and 2013) completed for the Biorefinery site revealed no evidence of recognized environmental conditions in connection with the Biorefinery site. The site was not identified on any database listings within the American Society for Testing and Materials-specified database report by Environmental Data Resources, Inc. The nearest property identified on the database report was located approximately 0.75 mile northeast and topographically down gradient of the Biorefinery site.

Law enforcement is provided by the Storey County Sheriff's Office (SCSO). The SCSO's responsibilities include prevention of crime, protection of property, medical emergencies, emergency response, animal control, as well as patrol and investigations. The SCSO maintains a substation in the community of Lockwood, adjacent to the project area. Fire protection is provided by the SCFD. The SCFD provides fire protection and emergency response capabilities through its 5 stations located throughout the county. SCFD Station 5 is located in the TRI Center on Peru Drive and is equipped with 1 engine, 1 ambulance, 1 squad vehicle, 1 patrol vehicle, 1 foam trailer, and 1 utility vehicle. Additionally, SCFD Station 4 is located in the community of Lockwood and is equipped with 1 engine, 1 ambulance, 1 water tender, 1 utility vehicle and 1 command vehicle. The nearest medical services are located in Reno-Sparks.

Feedstock Processing Facility

A Phase I Environmental Site Assessment (AECOM 2014) completed for the Feedstock Processing Facility site revealed no evidence of recognized environmental conditions in connection with the proposed site. The site was not identified on any database listings within the American Society for Testing and Materials-specified database report by Environmental Data Resources, Inc. The nearest property identified on the database report was the Lockwood Regional Landfill (2401 Canyon Way and including 1 Caramella Way) located approximately 1,500 feet from the southeast corner of the Feedstock Processing Facility site. According to Permit Number SW214R01 this site is a "compacted cell area fill municipal solid waste landfill covering approximately 856 acres with a waste volume of approximately 302 million cubic yards." The legacy disposal area is constructed without a liner or leachate collection system, the remaining area is a fully lined facility with leachate collection, groundwater, and methane monitoring which will be conducted for the operational and post-closure period of the landfill. Upon reaching capacity, a final cover will be constructed, and the Permittee will be responsible for 30 years of post-closure care. The landfill accepts waste predominantly from the local community and adjacent counties.

Law enforcement, fire protection, and medical services for the Feedstock Processing Facility are similar to the Biorefinery.

3.16.2 Environmental Effects – Public Health and Safety

3.16.2.1 Proposed Action

Fire Protection

Biorefinery

Routine operation and maintenance of the Biorefinery would require the use of several materials that require special handling. Operations of the Biorefinery would be performed in accordance with the SOP, (including the ERP and Fire and Life Safety Plan), which requires accident reporting, electrical safety, fire protection, and the use of personal protective equipment. These plans would be expected to minimize impacts to workers' health and safety during operation. In addition, all operation activities would be carried out in compliance with OSHA requirements that would include personal protective equipment (e.g., masks, protective clothing) and standard operating procedures to reduce potential accidents.

Details of the fire protection and facility security that would be in place at the Biorefinery are provided in Section 2.2.1.4, and include the full range of necessary requirements, specifically the development of a Fire and Life Safety Plan, installation of fire suppression systems, fire extinguishers and extinguisher equipment, designated personnel training, firefighting procedures, an alert system, and active monitoring or sensors to detect fires at the earliest stage. Facility security activities include controlled access and potential support from law enforcement personnel.

There would be a potential for fire associated with operations of the Biorefinery. The TRIGID would furnish water for fire protection with a minimum fire water flow from hydrants of 3,000 gpm for 3 hours. The Biorefinery also would have a 600,000-gallon water storage tank on-site. These measures are designed to reduce the potential for fire associated with facility operations. Further, there would be no buildings or structures that would impede fire-fighting activities, and there would be no off-site abutting or nearby structures that would be directly affected by fires at the facilities. Finally, the nearest residence is approximately 15 miles from the Biorefinery and the nearest industrial/commercial structure is 0.3 mile away, which effectively eliminates the possibility of fire spreading beyond the Biorefinery.

Given the importance of an effective fire and hazard protection operation at the Biorefinery, the coordination with the Biorefinery's SOP (including the ERP and Fire and Life Safety Plan), the close proximity of the SCSO, and an active program to limit access to the facility by outside parties, there would be no substantial likelihood of an impact on public health and safety from fires or accidents associated with the operation of the Biorefinery.

Feedstock Processing Facility

The components of fire protection at the Feedstock Processing facility are similar to those at the Biorefinery. Routine operation and maintenance of the Feedstock Processing Facility also would require the use of several materials that require special handling. Operations of the Feedstock Processing Facility would be performed in accordance with the SOP (including the ERP and Fire and Life Safety Plan). These plans are expected to minimize impacts to workers' health and safety during operation. In addition, all operation activities would be carried out in compliance with OSHA requirements that would include personal protective equipment (e.g., masks, protective clothing) and standard operating procedures to reduce potential accidents (see plan details in Section 2.2.2.4).

There would be a potential for fire associated with operation of the Feedstock Processing Facility. However a 660,000-gallon above ground water tank would be constructed on-site. A diesel fire water pump would provide the fire protection system with a minimum fire water flow to the hydrants of 3,000 gpm for 3 hours. These measures are designed to reduce the potential for fire associated with facility operations, and additionally the close proximity of the SCSO, would eliminate any substantial impact from fires at the Feedstock Processing Facility.

Intentional Destructive Acts

Biorefinery

The Biorefinery would present an unlikely target for intentionally destructive acts (terrorism or sabotage) and would have an extremely low probability of being attacked. Protective fencing would be constructed around the perimeter of the Biorefinery site within which all proposed activities would be confined. Public access to the site would be restricted to a gated single main entrance, which would be continuously monitored. Nighttime security lighting would be used, which also would benefit the safety of the workers and public in the operation of the Biorefinery. The Biorefinery would be continuously operated and under worker surveillance 24 hours a day, 7 days a week. All areas of the Biorefinery's buildings would be access controlled. All authorized personnel (employees and contractors) would be issued access key fobs to regulate entry into each closed facility building, including office and processing areas. Storage and use of hazardous materials would comply with federal, state, and local regulatory requirements. Additionally, the close proximity of the SCSO to the Biorefinery would aid in deterrent and a timely law enforcement response. Nevertheless, if destructive acts were somehow to occur, the consequences would not exceed those set forth in the fire risk scenarios presented above. Given the low likelihood of intentional destructive acts at the Biorefinery and the absence of any nearby population or receptors (other than other industrial facilities), the potential for impacts from intentionally destructive acts is considered to be very low.

Feedstock Processing Facility

The effects on the Feedstock Processing Facility from intentional destructive acts are similar as described for the Biorefinery; but any impacts would be even further reduced because there would be no process chemicals or fuels generated or stored at the Feedstock Processing Facility that would lead to an effect on nearby populations.

3.16.2.2 No Action Alternative

Since the IBPE would be located on sites located in an industrial area near a regional landfill and an industrial park that has been zoned and developed to support a large heavy industrial uses, it would be expected that if the Biorefinery and Feedstock Processing Facility would not be built that a similar use would occur at the sites and that the effects would be the same as with the Proposed Action alternative (i.e., minimal effects since transportation corridors, railways, infrastructure, and utilities have already been upgraded to handle demand from this type of heavy industrial use). There also would be no direct effects from public health and safety as a result of the IBPE. It would be possible that another industrial use would present similar potential health and safety effects.

4.0 Cumulative Impacts

The term “cumulative effect” is defined in the CEQ regulations as “the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7).

This chapter provides an overview of relevant past, present, and reasonably foreseeable actions in the vicinity of the IBPE and presents the cumulative effects analysis. Given the large area of the TRI Center, where the Biorefinery site is proposed to be located, the area of potential impacts to resources is within the 107,000-acre TRI Center development. The temporal boundary is the build-out of the TRI Center (25 years or more) and the 20- to 25-year life of the Biorefinery.

Given the isolated nature of the industrial area near the community of Lockwood, where the Feedstock Processing Facility site is proposed to be located, the area of potential impacts to resources is within the adjacent industrial land and the adjacent the Lockwood Regional Landfill.

4.1 Past, Present, and Reasonably Foreseeable Future Actions

Before the TRI Center industrial development, the area was undeveloped land originally purchased by Curtis Wright Company in the 1940s and then by Gulf Oil (BC Environmental, Inc. 2000). Most areas in the TRI Center are arid undeveloped open space and have not been previously used by man, except for sparse livestock grazing.

As stated in Section 3.1.1, the TRI Center is an active industrial center with a capacity of 100-million-square-feet of industrial space. Companies already at the TRI Center include Kal Kan Pet Foods; APL Logistics (distributors of Dell Computers); Alcoa (an aluminum micromill); James Hardie; Royal Sierra Extrusions; Golden Gate Petroleum; a Wal-Mart distribution center; Trans Western Polymers; and Frank-Lin rectifiers. Three gas-fired power plants also are located at the TRI Center: NV Energy, Inc., Barrick Mines, and Naniwa (a power plant that provides additional power support during peak hours). Currently, the closest developed property to the proposed site is an auto auction facility located 0.3 mile south of the site. Continued development of the TRI Center is anticipated to occur over an approximate 25-year period or until build out occurs on the 107,000-acre property. Of the 107,000-acre property, 30,000 acres are considered developable for industrial and manufacturing uses (sites with topography of less than 6 percent slope). The remaining 77,000 acres contain sloping topography that is not suitable for industrial buildings or warehouses, but is suitable for other types of developments including wind turbines and solar panels.

Other developments in the project vicinity include the Lockwood Regional Landfill and the former Tracy Power Plant, which had been located on adjacent land immediately north and approximately 3 miles from the Biorefinery site. In addition, the Nevada Department of Transportation constructed a new I-80 interchange located approximately 3 miles north of the site; this interchange is the current USA Parkway exit off of I-80 (Nevada Department of Transportation and U.S. Department of Transportation Federal Highway Administration 2002).

4.2 Cumulative Analysis

This analysis addresses resources that may be subject to cumulative impacts from the IBPE in combination with other actions that have taken place or are expected to take place in the area. The only areas where the IBPE would make a measurable incremental contribution to a cumulative impact is transportation, vegetation, wildlife (including special status species), visual resources, and air quality. The sections below address these areas in more detail.

4.2.1 Traffic/Transportation

Development of the IBPE would add approximately 138 new daily round trips to the roads in the project area. The increase in additional trips would result in a negligible cumulative impact as the Biorefinery would be located in an industrial complex that was developed with the intent of heavy industrial uses and associated demand on transportation corridors. The increase in additional trips to and from the Feedstock Processing Facility also would result in negligible cumulative impacts as the facility would be located adjacent to the Lockwood Regional Landfill, an area designed for high volume heavy traffic.

4.2.2 Vegetation

Development of the IBPE would remove the remaining sagebrush vegetation and understory grasses on approximately 33.8-acre parcel in an area that is already disturbed from other activities on portions of the sites. The IBPE's increment would remove a small fraction of the overall cumulative vegetation removal that would result from similar developments within the TRI Center and adjacent industrial lands. Since the area is zoned for heavy industrial development, this impact would likely occur regardless of the IBPE since another industrial facility would probably be built at the sites if the IBPE would not be built. The sagebrush vegetation and understory grasses within the TRI Center and adjacent industrial lands are typical of the surrounding area and do not contain any unique or significant vegetation species. This ecological system occurs throughout much of the western U.S. (NatureServe 2008). Consequently, no significant cumulative effects from the project's removal of vegetation are expected.

4.2.3 Wildlife and Fisheries

Development of the IBPE would remove the remaining potential wildlife habitat on approximately 33.8 acres in an area that is already disturbed from other construction activities within the TRI Center and from grading that has already occurred on portions of the IBPE sites. This effect would be 0.06 percent of the overall cumulative impact of removing approximately 30,000 acres within the project vicinity for similar industrial buildings and 0.02 percent of the overall disturbance that would occur within the entire 107,000-acre TRI Center.

The IBPE would have no impact on fisheries resources due to a lack of perennial water sources near the sites. No significant cumulative effects on wildlife and fisheries are expected from the construction or operation of the proposed project.

4.2.4 Special Status Species

Since there are no federally listed plant or wildlife species at the sites, no cumulative impacts to federally listed species would occur. Since there are no known occurrences of state listed or sensitive plant species at the sites, no cumulative impacts to special status plant species would occur.

Development of the IBPE sites would disturb the approximately 33.8-acre parcel and remove potentially suitable habitat for state-listed or sensitive mammal and bird species, including migratory bird species. The IBPE's impact would be part of a larger cumulative impact of the planned removal of 30,000 acres from similar industrial buildings and installing other developments such as wind turbines and solar panels on the remaining 77,000 acres. However, due to the large amount of suitable habitat in the vicinity of the sites and beyond the TRI Center, no impacts to these species are expected to occur. The potential habitat consisting of sagebrush vegetation and understory grasses within the TRI Center and adjacent industrial areas are typical of the surrounding area and do not contain any unique or significant vegetation species. This ecological system occurs throughout much of the western U.S. (NatureServe 2008).

4.2.5 Air Quality

As discussed in Section 3.11, the IBPE would emit less than 100 tpy of any criteria pollutant, and would be considered by NDEP-BAPC to be a minor source for air emissions. The area currently meets ambient

air quality standards. All stationary sources that have the potential to emit air pollution are required to comply with NDEP-BAPC air permitting requirements to prevent construction and operations emissions from exceeding applicable thresholds. Therefore it is not expected that there would be significant⁷ cumulative impacts associated with the construction and operation of the IBPE.

4.2.6 Visual Resources

The proposed IBPE would result in the introduction of structural elements that are visually similar to existing conditions and landscape character (i.e., a modified landscape with varying levels of industrial infrastructure). This would be a part of the cumulative effect on visual resources from converting unoccupied land into an industrial area. Given the unpopulated and remote nature of the TRI Center and the surrounding industrial area, no significant cumulative effects are expected as no sensitive receptors would be affected by this change in the visual character of the area.

4.3 Irreversible and Irretrievable Impacts

4.3.1 Air Quality and Meteorology

Air quality impacts in the project area would be reversible. Once project activities are completed the air quality would return to its pre-project state. Since no exceedances of the National Ambient Air Quality Standards are anticipated for the project irreversible impacts to air quality would not be anticipated.

4.3.2 Water Resources

As there would be no impacts to surface water, groundwater, wetlands, or floodplains, there would be no irreversible and irretrievable impacts.

4.3.3 Biological Resources

No irreversible commitments would be anticipated for biological resources. A total of approximately 33.8 acres of wildlife habitat and vegetation (mostly disturbed) be lost during construction and operation, an irretrievable commitment of this resource.

4.3.4 Cultural Resources

Historic artifacts could be irreversibly and irretrievably lost if inventory, avoidance, and/or mitigation efforts are not sufficient to identify and protect them.

4.3.5 Land Use Requirements/Restrictions

Impacts to land use generally would be reversible through reclamation efforts after decommissioning, although loss of use during operation would be irretrievable.

4.3.6 Geology and Soils

An irretrievable loss of soil productivity and quality would be lost for the life of the IBPE on approximately 33.8 acres (mostly disturbed). No irretrievable loss of geological resources would be anticipated. No irreversible impacts to geology and soil resources would be anticipated.

⁷ Cumulative effects on air quality are addressed as part of the air permit application, by adding background concentrations (from other sources) to the modeled impact of the Biorefinery. In its review of the air permit application, NDEP-BAPC would evaluate the cumulative air quality impacts confirming that they would not exceed the ambient air quality standards. The three power plants in the TRI Center are gas-fired and are included in the NDEP analysis of the incremental impacts of the Biorefinery.

4.3.7 Noise and Odors

Elevated noise and odor levels that would occur in and near the project area of the IBPE during construction and operations would be an irretrievable impact. However, project-related noise would be reversible and would cease after decommissioning of the IBPE.

4.3.8 Hazardous Materials and Waste Streams

As a result of appropriate emergency plans for both the Biorefinery and the Feedstock Processing Facility, no irreversible or irretrievable impacts to from hazardous materials and waste are anticipated.

4.3.9 Utilities and Infrastructure

As a result of adequate utility infrastructure, no irreversible or irretrievable impacts are anticipated.

4.3.10 Socioeconomic Resources and Environmental Justice

Labor and capital committed to the IBPE would generate local economic productivity, including jobs. These effects would be reversible in the event the project was terminated. Once invested and expended, however, they would not be retrievable. Since there are no communities in close proximity to both sites, there are no environmental justice irreversible or irretrievable impacts.

5.0 Measures to Minimize or Reduce Impacts and BMPs

BMPs and measures to reduce impacts are detailed in **Table 5-1**. Site-specific BMPs would be developed once the site layout, engineering specifications, and operating procedures are finalized.

Table 5-1 Summary of Measures to Minimize Impacts

Resource	Measures to Minimize or Reduce Impacts and BMPs
Air Quality	Water spraying during excavations and earthwork loading operations.
Air Quality	Intermittent spraying of material piles.
Air Quality	Haul roads would be maintained and watered.
Air Quality	Trucks transporting construction materials would be covered.
Air Quality	Job site speeds would be maintained at 5 mph or less.
Air Quality	Excavated materials would be maintained away from active traffic lanes.
Surface Water	Installation of physical barriers such as silt fencing, straw bales, straw waddles, and/or riprap to minimize transport of sediment and other pollutants.
Surface Water	Installation of storm water drains, culverts, and other constructed conveyances to collect storm water and direct flow in process areas to the evaporation pond and divert flow away from process areas where appropriate.
Surface Water	Use of secondary containment for storage of oils and chemicals.
Surface Water	Inspections of the site and BMPs once a week and after every rain event greater than 0.5 inch.
Surface Water	Monitoring of construction entrances for significant sediment that could be tracked out of the construction site. The on-road sediment would be regularly cleaned up and removed.
Odor	Baled feedstock would be wrapped, transported, and potentially stored (if required) in polyethylene film to reduce odor.

6.0 Document Preparers

6.1 List of Preparers

As required by NEPA regulations (40 CFR § 1502.17), **Table 6-1** lists the people responsible for preparing this EA. AECOM has certified that it does not have any financial or other interest in the decisions to be made pursuant to this EA.

Table 6-1 List of Preparers and Reviewers

Contact	Qualifications	Role
U.S. Department of Defense		
Sierra BioFuels		
Jeanne Benedetti	BS, Chemical Engineering MS, Business Administration Juris Doctor Years of Experience: 27	Vice President
David Langer	B.S. Environmental and Occupational Health, with a minor in Biology Years of Experience: 20	Materials Processing Facility Manager
AECOM		
Jen Strona	BS Geology and Environmental Science Years of Experience: 10	Water Resources, Soils and Geology
Steve Graber	BS Natural Resource Management BA Economics Years of Experience: 10	Land Use, Transportation, Socioeconomics, Public Health and Safety
Matt Brekke	BS Wildlife Biology Years of Experience: 4	Wildlife and Fisheries, Special Status Species, Vegetation
Bruce Macdonald (SLR International)	PhD Atmospheric Science MS Atmospheric Science BA Mathematics Years of Experience: 35	Project Lead, Air Quality
Melanie Martin	MS Environmental Policy and Natural Resource Management BS Agriculture, Environmental Protection Years of Experience: 13	NEPA Lead, Document Preparation
Kim Munson	MA Anthropology BA Anthropology Years of Experience: 18	Cultural Resources
Jason Thoene	MS in Geographic Information Systems BA Geology Years of Experience: 14	GIS

6.2 Agencies, Organizations, and Persons Contacted

The following sections identify the agencies and Native American tribes contacted during preparation of this EA.

6.2.1 State Agencies

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State Historic Preservation Officer
State Historic Preservation Office
100 North Stewart Street
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Randy Phillips
Bureau of Air Pollution Control
Nevada Department of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701

Mark Kaminski, PE
Bureau of Water Pollution Control
Nevada Department of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701

Mark Freese
State of Nevada – Department of Wildlife
1100 Valley Road
Reno, Nevada 89512

6.2.2 Local Agencies

Storey County Board of County Commissioners
26 B Street
Virginia City, Nevada 89440

6.2.3 Native American Tribes

Fort McDermitt Paiute and Shoshone Tribes
PO Box 457
McDermitt, Nevada 89421

Pyramid Lake Paiute Tribe of the Pyramid Lake
PO Box 256
Nixon, Nevada 89424

Paiute-Shoshone Tribe of the Fallon
Reservation
565 Rio Vista Drive
Fallon, Nevada 89406

Reno-Sparks Indian Colony
98 Colony Road
Reno, Nevada 89502

Summit Lake Paiute Tribe
1708 H Street
Sparks, Nevada 89431

Walker River Tribe of the Walker River
PO Box 220
Schurz, Nevada 89427

Washone Tribe (NV and CAL)
919 Highway 395 South
Gardnerville, Nevada 89410

Yearington Paiute Tribe of the Yearington
Colony
171 Campbell Lane
Yearington, Nevada 98447

6.2.4 Federal Agencies

Ms Marcy Haworth
US Fish & Wildlife Service
Nevada Fish & Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, Nevada 89502

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Appendix A

“Will Serve” Letters



CANYON GENERAL IMPROVEMENT DISTRICT

800 Peri Ranch Rd., Suite 103, Sparks, NV 89434

Phone 342-2850

Fax 342-2851

January 29, 2014

Re: Fulcrum Sierra BioFuels, LLC
Feedstock Facility Project

Dear Applicant:

This letter will serve as a commitment to provide potable water service to the above referenced project from the Canyon General Improvement District. This letter will also confirm that the C.G.I.D. has the reserve capacity to provide potable water.

The commitment to provide service is conditional upon the Applicant's submittal of detailed drawings to the C.G.I.D. for review and approval.

If you have any question please call me at 342-2850.

We look forward to working with you in the future.

Sincerely,

Mitch Andreini
Manager, Canyon General Improvement District



Water and Sanitary Sewer Will Serve Letter CONDITIONAL

Re: Fulcrum Sierra BioFuels, LLC
3600 Peru Drive (a 16.77 acre site – “Real Property”)

Dear Applicant:

Notwithstanding previous agreements between Fulcrum Sierra BioFuels, LLC (“**Applicant**”), Tahoe-Reno Industrial Center, LLC, (“**TRIC**”) and TRI General Improvement District (“**TRIGID**”) (collectively the “**Parties**”), this letter constitutes a commitment by TRI Water and Sewer Company (“**Company**”) to allocate groundwater rights in the amount of 155 acre feet per annum for use on the Real Property and 0.5 acre feet per annum per acre (equivalent to 8.39 acre feet) of potable water in order to serve Applicant’s above-referenced project (the “**Project**”) from the community water system owned and operated by the Company. This letter also constitutes a commitment to provide sanitary sewer service to the Project from the Company’s community sewer system, including treatment capacity in the TRI Sewer Treatment Plant I.

Applicant agrees that water to be discharged from the Project to the sanitary sewer will comply in all respects with the maximum concentrations limits set forth in its Sewer Pretreatment Checklist, with the exception that such discharged water, containing cooling water, that may have a maximum concentration not to exceed a total dissolved solids (“**TDS**”) of 790 mg/L (“**Industrial Discharge Water**”), and the Company and TRIGID agree to accept Applicant’s Discharge Water into the sanitary sewer with such TDS concentration.

This commitment to provide service is conditioned upon the Applicant’s i) submittal of detailed drawings to the Company for review and approval; ii) payment of all fees associated with such review; and iii) payment of a monthly excess TDS concentration surcharge, as calculated pursuant to Section 12.16.200 of the City of Reno Municipal Code (as may be amended), not to exceed \$2.02 per 1000 gallons of Industrial Discharge Water (excludes domestic sewer discharge volumes). This commitment of resource and system capacity shall not be valid if the approval for the Project expires or is terminated

by the local governing body. At that time this commitment to provide service shall be automatically revoked.

The necessary water and sewer infrastructure extension to serve the Project shall be made from the nearest source of adequate capacity in accordance with approved the Company's plans and specifications. All water and sewer service shall be supplied pursuant to the rules, rates, and regulations of the Company, except as provided in the previous agreements between the Parties.

This water and sewer commitment is based on information, plans and Sewer Pretreatment Checklist submitted to the Company by the Applicant. This letter does not modify or amend any previous agreement between the parties. Review of the information submitted does not constitute an application for service nor imply completed processing of design and construction drawings for approval of these services by the Company or TRIGID.

Sincerely,

 7/7/2010.

JUN 07 2010

Vincent J. Griffith, President

TRI Water and Sewer Company, a Delaware Corporation

cc Storey County Community Development Department

Appendix B

Air Quality Analysis During Construction of the Biorefinery

Appendix B
Sierra BioFuels LLC

Criteria and Carbon Dioxide Emissions from Construction of the Feedstock Processing Facility

						Pollutant						
						NO _x	SO ₂	VOC	PM/PM ₁₀	CO	CO ₂	
Emission Factor (lb/hp-hour)						0.0152	0.00205	0.0022	0.0013	0.009	1.15	
Regular Work Week		6	Days/week									
Total Construction Schedule		52	Weeks									
Unit	Horse- power	Hours/ Day	Days/ Week	Unit- Weeks	Total Hours ⁽¹⁾	Total Emissions (tons) ⁽²⁾						
Air Compressors	175	10	6	10	600	0.80	0.11	0.12	0.07	0.47	60.38	
Backhoes	75	10	6	10	600	0.34	0.05	0.05	0.03	0.20	25.88	
Bobcats	50	10	6	16	960	0.36	0.05	0.05	0.03	0.22	27.60	
Concrete Pumping	75	10	6	16	960	0.55	0.07	0.08	0.05	0.32	41.40	
Cranes	300	10	6	16	960	2.19	0.30	0.32	0.19	1.30	165.60	
Dozers	100	10	6	8	480	0.36	0.05	0.05	0.03	0.22	27.60	
Dump Trucks	600	10	6	8	480	2.19	0.30	0.32	0.19	1.30	165.60	
Fork Lifts	75	10	6	26	1,560	0.89	0.12	0.13	0.08	0.53	67.28	
Grout Pump	300	10	6	16	960	2.19	0.30	0.32	0.19	1.30	165.60	
Site Graders	300	10	6	14	840	1.92	0.26	0.28	0.16	1.13	144.90	
Road Graders	300	10	6	6	360	0.82	0.11	0.12	0.07	0.49	62.10	
Scissor Lift	80	10	6	26	1,560	0.95	0.13	0.14	0.08	0.56	71.76	
Rollers	75	10	6	16	960	0.55	0.07	0.08	0.05	0.32	41.40	
Track Hoes	100	10	6	16	960	0.73	0.10	0.11	0.06	0.43	55.20	
Packers	300	10	6	26	1,560	3.56	0.48	0.51	0.30	2.11	269.10	
Water Pumps	25	6	6	16	576	0.11	0.01	0.02	0.01	0.06	8.28	
Water Trucks	100	6	6	26	936	0.71	0.10	0.10	0.06	0.42	53.82	

Emission Factor (lb/hp-hour)	Pollutant					
	NOx	SO ₂	VOC	PM/PM ₁₀	CO	CO ₂
Regular Work Week	0.0152	0.00205	0.0022	0.0013	0.009	1.15
Total Construction Schedule						
	6 Days/week					
	52 Weeks					

Unit	Horse-power	Hours/Day	Days/Week	Unit-Weeks	Total Hours ⁽¹⁾	Total Emissions (tons) ⁽²⁾					
Generators	25	10	6	52	3,120	0.59	0.08	0.09	0.05	0.35	44.85
Pressure Washers	11	10	6	8	480	0.04	0.01	0.01	0.00	0.02	3.04
1-Ton Pickup	300	1	6	52	312	0.71	0.10	0.10	0.06	0.42	53.82
1-Ton Truck	300	1	6	52	312	0.71	0.10	0.10	0.06	0.42	53.82
Compactors / Tampers	20	10	6	8	480	0.07	0.01	0.01	0.01	0.04	5.52
Concrete Mortar Mixers	25	10	6	16	960	0.18	0.02	0.03	0.02	0.11	13.80
Trenchers	25	10	6	16	960	0.18	0.02	0.03	0.02	0.11	13.80
TOTAL CONSTRUCTION EMISSIONS (ton/year)						21.70	2.93	3.14	1.86	12.85	1642.13

¹ Total unit hours are calculated from the hours per day times days per week times total unit-weeks.

² Emissions are calculated from the emission factor (lb/hp-hour) times the total hours (hours) times the horsepower (hp) for the individual equipment divided by 2000 to convert from lbs. to tons.

Appendix C

Air Quality Analysis During Construction of the Feedstock Processing Facility

Appendix C
Sierra BioFuels LLC
Criteria and Carbon Dioxide Emissions from Construction of the Biorefinery

						Pollutant					
						NOx	SO2	VOC	PM/ PM10	CO	CO2
Emission Factor (lb/hp-hour)						0.0152	0.00205	0.0022	0.0013	0.009	1.15
Regular Work Week (days/week)				6							
UNIT	Horse-power	Hours/day	Days/week	Unit - Weeks	Total Hours ⁽¹⁾	Total Emissions (tons) ⁽²⁾					
Air Compressors	175	10	6	12	720	0.96	0.13	0.14	0.08	0.57	72.45
Backhoes	75	10	6	11	660	0.38	0.05	0.05	0.03	0.22	28.46
Bob Cats	50	10	6	36	2,160	0.82	0.11	0.12	0.07	0.49	62.10
Concrete Pumping	75	10	6	24	1,440	0.82	0.11	0.12	0.07	0.49	62.10
Cranes	300	10	6	36	2,160	4.92	0.66	0.71	0.42	2.92	372.60
Dozers	100	10	6	8	480	0.36	0.05	0.05	0.03	0.22	27.60
Dump Trucks	600	10	6	8	480	2.19	0.30	0.32	0.19	1.30	165.60
Fork Lifts	75	10	6	140	8,400	4.79	0.65	0.69	0.41	2.84	362.25
Grout Pump	300	10	6	24	1,440	3.28	0.44	0.48	0.28	1.94	248.40
Site Graders	300	10	6	14	840	1.92	0.26	0.28	0.16	1.13	144.90
Road Graders	300	10	6	6	360	0.82	0.11	0.12	0.07	0.49	62.10
Scissor Lift	80	10	6	140	8,400	5.11	0.69	0.74	0.44	3.02	386.40
Rollers	75	10	6	14	840	0.48	0.06	0.07	0.04	0.28	36.23
Track Hoes	100	10	6	11	660	0.50	0.07	0.07	0.04	0.30	37.95
Tractors	300	10	6	140	8,400	19.15	2.58	2.77	1.64	11.34	1449.00
Packers	25	10	6	14	840	0.16	0.02	0.02	0.01	0.09	12.08
Water Pumps	100	6	6	140	5,040	3.83	0.52	0.55	0.33	2.27	289.80
Water Trucks	300	6	6	140	5,040	11.49	1.55	1.66	0.98	6.80	869.40
Generators	25	10	6	140	8,400	1.60	0.22	0.23	0.14	0.95	120.75
Pressure Washers	11	10	6	12	720	0.06	0.01	0.01	0.01	0.04	4.55

						Pollutant					
						NOx	SO ₂	VOC	PM/ PM ₁₀	CO	CO ₂
Emission Factor (lb/hp-hour)						0.0152	0.00205	0.0022	0.0013	0.009	1.15
Regular Work Week (days/week)						6					
UNIT	Horse-power	Hours/day	Days/week	Unit - Weeks	Total Hours ⁽¹⁾	Total Emissions (tons) ⁽²⁾					
1-Ton Pickup	300	12	6	140	10,080	22.98	3.10	3.33	1.97	13.61	1738.80
1-Ton Truck	300	12	6	140	10,080	22.98	3.10	3.33	1.97	13.61	1738.80
Compactors/Tampers	20	10	6	8	480	0.07	0.01	0.01	0.01	0.04	5.52
Concrete/Mortar Mixers	25	10	6	24	1,440	0.27	0.04	0.04	0.02	0.16	20.70
Trenchers	25	10	6	25	1,500	0.29	0.04	0.04	0.02	0.17	21.56
TOTAL CONSTRUCTION EMISSIONS (ton/year)						110	15	16	9	65	8,340

1 Total unit hours are calculated from the hours per day times days per week times total unit-weeks.

2 Emissions are calculated from the emission factor (lb/hp-hour) times the total hours (hours) times the horsepower (hp) for the individual equipment divided by 2000 to convert lbs. to tons.

Appendix D

NDOW and USFWS Correspondence

May 20, 2014

Mr. Mark Freese
State of Nevada – Department of Wildlife
1100 Valley Road
Reno, Nevada 89512

RE: Request for Evaluation and Concurrence
Draft Environmental Assessment for Fulcrum Sierra BioFuels, LLC

Dear Mr. Freese

We are currently seeking information from the Nevada Department of Wildlife (NDOW) regarding the data provided in an updated preliminary Draft Environmental Assessment (EA) that address wildlife and special status species for two sites in Storey County Nevada that are proposed for construction of industrial operations.

The Air Force Research Laboratory (AFRL) may be partnering with a commercial company, Fulcrum Sierra BioFuels, LLC (Sierra BioFuels) as an awardee under Phase II of the Advanced Drop-In Biofuel Production Project (ADBPP), to develop an Integrated Biofuel Production Enterprise (IBPE) in Storey County, Nevada. In anticipation of that potential partnering, AFRL has requested that we solicit specific information and advice regarding the proposed project Area of Potential Effect (APE), which is being described in a Draft EA that is currently being prepared for the IBPE on behalf of the AFRL. A brief description of the ADBPP is provided in **Attachment 1**.

The proposed IBPE will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites, each zoned "1-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center (TRI Center) near the community of McCarran, approximately 20 miles east of Reno, Nevada.

The NDOW previously commented on a Draft EA in 2011 for Sierra BioFuels' previously configured waste-to-ethanol biorefinery proposed for the same site in the TRI Center (See **Attachment 2**). As noted in Section 3.9 and Section 3.10 of the preliminary Draft EA, protective measures that limit habitat removal (i.e. ground disturbing activities) during the migratory bird nesting season and a wildlife mortality monitoring program have been incorporated to address NDOW's previous comments. Sierra BioFuels will work with NDOW on wildlife attraction nuisance issues if wildlife nuisance becomes an issue during construction (See **Attachment 3**).



Once the AFRL finalizes the Draft EA, it will be sent to the Nevada State Clearinghouse - Department of Administration, Budget and Planning Division where the NDOW will have the opportunity to review and provide further comment during the public comment period.

If upon review of the attached, you have any comments you wish to have incorporated into the Draft EA, the AFRL respectfully requests that you respond within 15 days of receipt of this letter. AFRL's Program Manager is Mr. James Neely, (937) 904-4374, James.Neely@wpafb.af.mil. AFRL's Title III action officer on this effort is Mr. Warren Assink, (937) 255-3480, warren.assink@us.af.mil.

Please do not hesitate to call or e-mail me at (907) 999-3977 and bmacdonald@slrconsulting.com, respectively if you have any questions.

Regards,

A handwritten signature in red ink that reads "Bruce C. Macdonald". The signature is written in a cursive, flowing style.

Bruce C. Macdonald
Principal Scientist
SLR International Corporation

Attachments

cc: James Neely, AFRL
Warren Assink, AFRL
Jeanne Benedetti, Fulcrum Sierra BioFuels, LLC



Attachment 1

ADBPP Overview.

The Advanced Drop-In Biofuel Production Project (ADBPP) is a Department of Defense (DoD)-led multi-agency effort to develop a viable commercial-scale Integrated Biofuel Production Enterprise (IBPE) that has a capacity of to produce at least 10 million gallons per year of neat biofuel. The effort intends to support the establishment of a domestic commercial-scale manufacturing facility that produces aviation and marine diesel biofuels from sustainable biomass feedstock. The DoD has indicated intention to purchase drop-in replacement biofuels that meet approved product specifications, meet the provisions of the Energy Independence and Security Act (EISA) Section 526, and can utilize the existing infrastructure, and are deliverable to the DoD fuel supply system fully blended with conventional petroleum product counterparts.



Attachment 2

Nevada Department of Wildlife Comments and Responses dated April 21, 2011

Appendix D – Responses to Comments

Comment	Response	Action Taken
<p>STATE OF NEVADA DEPARTMENT OF WILDLIFE 1100 Valley Road Reno, Nevada 89512 (775) 688-1400 • Fax (775) 688-1888</p> <p>BEAUX GASTONVAL <small>Assistant</small></p> <p>EDUARDO E. WATERS <small>Director</small></p> <p>BERNARD G. HARRIS, II <small>Deputy Director</small></p> <p>FREDICK G. CATES <small>Deputy Director</small></p> <p>April 21, 2011</p> <p>U.S. Department of Energy Loan Guarantee Program Office Washington, D.C. 20585</p> <p>Subject: 16MW waste-to-ethanol facility, Futrum Sierra Biorefuels, Storey County</p> <p>To whom it may concern,</p> <p>The Nevada Department of Wildlife (NDOW) is supportive of the development of increasing energy efficiencies, such as in the waste-to-ethanol, Futrum Sierra Biorefuels proposed project. NDOW's goal and responsibility is to identify potential impacts to wildlife prior to project implementation and to suggest mitigation measures to avoid and lessen impacts to wildlife. During our review of this project proposal, we have identified proposed measures to minimize and mitigate impacts to wildlife.</p> <p>NDOW encourages construction activities to occur outside the migratory bird nesting season (March 15 – July 31) within currently intact habitat. Limiting construction activities during this time will reduce the potential for taking of a migratory bird species. As such, we recommend stating in table 1.1 that protective measures include "nesting habitat removal (i.e. ground disturbing activities) during the migratory bird nesting season". If ground disturbing activities must occur during this time frame, we request that appropriate surveys be conducted by a qualified biologist. If a migratory bird nest is discovered, please contact the United States Fish and Wildlife Service for direction.</p> <p>NDOW is supportive of the facilities processed wastewater treatment program. Additionally, we support the odor, vector, and noise control methods that are being proposed. We encourage discussion with the proponent on how to resolve wildlife attractive nuisance issues if it is determined that the above mentioned methods have failed. Furthermore, we encourage a wildlife mortality monitoring program be implemented to guide adaptive management techniques that reduce wildlife mortalities. NDOW encourages that wildlife mortalities associated with the construction and operation of the biorefuels facility be reported to NDOW on an annual basis.</p> <p>NDOW encourages that a noxious and invasive species plan be developed and implemented to prevent the introduction and spread of undesirable species into adjacent habitat. Such a plan should include prevention measures, inventory, monitoring, and treatment. Noxious and invasive species plans ensure wildlife compatibility with new development by protecting and conserving adjacent habitat.</p>	<p>1) Thank you for your comment.</p> <p>2) Section 3.8.2.1 defines the protection measure noted for migratory bird nesting as "Potential impacts to breeding birds from development activities will be minimized during construction by avoiding removal of migratory bird habitat on currently undisturbed lands on the Site to the extent possible between March 15 and July 31. Should removal of habitat be required during this period, Sierra Biorefuels will coordinate with the NDOW and the USFWS to determine if surveys and appropriate mitigation, such as buffer zones around occupied nests, may be needed" (page 3-28). The text in Table 1-1 will be revised to clarify the protective measure.</p> <p>3) A section regarding "Wildlife Nuisance Control" has been added to Section 2.1.4.17 (page 2-25) that includes a monitoring program and annual reporting.</p> <p>4) The Facility will be constructed in an active industrial park on partially disturbed areas with disturbed properties on adjacent lands. In addition, all areas disturbed</p>	<p>1) None.</p> <p>2) Table 1-1, page viii: Revise last sentence in Special Status Species row to "Protective measures that limit habitat removal (i.e. ground disturbing activities) during the migratory bird nesting season will be implemented."</p> <p>3) Add subsection at the end of 2.1.4.17, page 2-25: "Wildlife Nuisance Control The Facility will work with NDOW on wildlife attraction nuisance issues if wildlife nuisance becomes an issue. Facility personnel will monitor the grounds for wildlife mortalities during construction and operation. Any wildlife mortalities would be reported to NDOW annually."</p> <p>4) None.</p>



Appendix D – Responses to Comments

Comment	Response	Action Taken
<p>NDOW is concerned regarding fire ignitions as a result of construction activities. Fires have occurred on rangelands in much of northern Nevada leading to cheatgrass dominated areas. These cheatgrass dominated rangelands have reduced the quality and quantity of wildlife habitat. These areas are prone to burning and are easily ignited. NDOW recommends using the best management practices and other tools to reduce the risk of fire ignitions during construction and operation of the biofuels facility.</p> <p>NDOW is available for further discussion regarding the waste-to-energy, Palerum Sierra Biofuels proposed project. Please let us know if you have any questions, concerns, or need additional information.</p> <p>Sincerely,</p>  <p>Mark Freese Supervisory Habitat Biologist</p>	<p>during construction will be developed. Since no reclamation activities are planned, a noxious and invasive species plan would not be applicable to this project.</p> <p>5) As noted in Table 2-3, a Fire and Life Safety Plan that is applicable to the construction and operation of the Facility will be submitted to the Storey County Fire Department (page 2-30). The Plan will consider best management practices to reduce risk of fire ignitions during construction and operation.</p>	<p>5) None.</p>

Attachment 3

Fulcrum Sierra BioFuels, LLC

Project Overview and Analysis of Fisheries, Wildlife, and Special Status Species

(excerpts from Draft Environmental Assessment)

Project Overview

Project Description

Fulcrum Sierra BioFuels, LLC (Sierra BioFuels), intends to construct a Feedstock Processing Facility and a Biorefinery for the production of synthetic paraffinic kerosene (SPK) fuel from municipal solid waste (MSW) from which recyclables and non-biomass components are removed (feedstock). The Biorefinery would use steam-reforming gasification, Fischer-Tropsch (FT) and fuels upgrading technologies (“gas-to-liquids” or “GTL”) to convert nearly 200,000 tons of feedstock per year into approximately 12.3 million gallons of SPK fuel. The Biorefinery would be located on approximately 19.4 acres of privately owned land within the Tahoe-Reno Industrial Center (TRI Center), in McCarran, Storey County, Nevada. The Feedstock Processing Facility would be located approximately 15 roadway miles to the southwest of the Biorefinery on approximately 14.4 acres, privately owned land, adjacent to the Lockwood Regional Landfill.

Biorefinery

The site for the Biorefinery would be located entirely on approximately 19.4 acres of privately owned land within the TRI Center, near the community of McCarran, Storey County, Nevada. A plot plan is depicted in **Figure 2-1**. There are no existing facilities or utilities on the site, but the site has been partially disturbed by clearing, grading, and the use of fill material prior to Sierra BioFuels’ purchase of the property. The property is bordered by undeveloped land to the west and south, a railroad line borders the property on the north, and Peru Drive, a major TRI Center improved road, to the east. The existing rail and road systems would provide both rail and truck/car access to the site. The Biorefinery and supporting infrastructure would occupy the entire 19.4 acre parcel, which would be fenced along the perimeter.

The Biorefinery’s process uses steam reforming gasification, FT and GTL technologies to convert feedstock into SPK fuel. The Biorefinery would be designed to convert nearly 200,000 tons of feedstock per year into approximately 12.3 million gallons of SPK fuel.

The feedstock would be converted into SPK fuel using a four-step process comprised of feedstock preparation, steam reforming gasification, FT liquids synthesis and hydroprocessing/fractionation upgrading. In the first step, feedstock preparation, MSW would be delivered to the Feedstock Processing Facility and be prepared, sorted, and baled into feedstock. The second step, steam reforming gasification, the feedstock would be converted into a syngas. In the third step, FT liquids synthesis, the syngas would be catalytically converted into FT liquid hydrocarbons using conventional fixed bed catalyst FT reactors. In the fourth and final step, hydroprocessing/fractionation upgrading, the FT liquids are then upgraded to SPK fuel. A portion of the purge gas would be used as fuel gas in a utility boiler to produce steam to be used in the Biorefinery, indirectly offsetting a portion of electric power requirements.

Feedstock Processing Facility

The Feedstock Processing Facility would be designed to process non-hazardous, MSW into feedstock. The Feedstock Processing Facility would be located on approximately 14.4 acres, in the industrial area near the



community of Lockwood, Storey County, Nevada, adjacent to the Lockwood Regional Landfill located at 2401 Canyon Way, Storey County, as shown in **Figure 3-1**, in Chapter 3.0 of the EA, and provided below.

After processing the MSW at the Feedstock Processing Facility, the following three major categories of materials will be transported offsite:

- Baled feedstock: The baled MSW would be transported to the Biorefinery on flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of feedstock would be delivered to the Biorefinery daily, five days per week. This equates to 20 truckloads each day;
- Recoverable material: Recovered material, including but not limited to ferrous and nonferrous metals, cardboard, plastics, paper, and other recyclable materials would be recovered from the MSW and shipped to the commodities markets; and
- Residual material: Residual material not used as feedstock or recovered for recycling (concrete, dirt, fines, etc.) would be transported to and disposed of at the Lockwood Regional Landfill. A truck loading conveyor would load and distribute residual material into transfer trailers for shipment to the landfill.

Selected Sections of the Draft EA

3.9 Wildlife and Fisheries

3.9.1 Affected Environment

The following descriptions of both resident and migratory wildlife include species that have either been documented near the project area of the Biorefinery site and the Feedstock Processing Facility site or those that may occur in western Nevada based on habitat associations. Wildlife species occurring near the Site are typical of the intermountain semi-desert shrublands of the Truckee River valley. Information regarding wildlife species and habitat near the site was obtained from a review of existing published sources, U.S. Fish and Wildlife Service (USFWS), NDOW file information, and Nevada Natural Heritage Program (NNHP) database information. Formal consultation with the USFWS was not initiated due to the absence of federally listed plant or wildlife species at either site, as noted in Section 3.10. Additionally, consultation was not initiated with the NDOW as a result of the limited amount of habitat affected the industrial zoning and nature of the site.

3.9.1.1 Big Game

Biorefinery

The Biorefinery project area does not contain any important big game habitats such as migration corridors, critical winter habitat, or calving/fawning/lambing habitats (NDOW 2008a,c). Big game use of the site is low, based on scat present, and consists mainly of mule deer occasionally wandering through the site. Big game population numbers in the western Nevada fluctuate slightly from year-to-year based on weather and habitat conditions. Water availability and amount of quality habitat are the limiting factors to big game populations within the project area. Human presence, water availability, forage quality, cover, and weather patterns typically determine the level of use and movement of big game species.

The Biorefinery site has been mapped as containing Mule Deer Limited Range (**Figure 3-9**) and Potential Bighorn Sheep Range (**Figure 3-10**).

Mountain lions and black bears also are classified as a big game species in Nevada (NDOW 2008a,b). Both of these species are fairly common in western Nevada and typically occupy the higher elevations



surrounding the site; although they may travel through the project area if prey populations are present (NDOW 2008a,b).

Feedstock Processing Facility

The potential for big game near the Feedstock Processing Facility site is similar to the Biorefinery, with the exception that potential bighorn sheep range is present within the Feedstock Processing Facility site (NDOW 2008a,c), but due to the industrial development in the vicinity, bighorn sheep are not likely to use the site.

3.9.1.2 Small Game

Biorefinery

Small game species that could potentially occur near the Biorefinery site include chukar, mourning dove, cottontail, and black-tailed jackrabbit (NDOW 2008b). Chukar are mainly found west of the site, especially on rocky ridges and hillsides with cheatgrass (NDOW 2008b). Mourning doves are found in wide range of habitats in close proximity to water and are most likely to occur near both sites during spring, summer, and early fall. Furbearers that may occur near the Site include badger, red fox, and bobcat (NDOW 2008b).

Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 4.5 miles in a direct line north of the site and are not typically found near the Biorefinery project area.

Feedstock Processing Facility

The potential for small game near the Feedstock Processing Facility site is similar to the Biorefinery site. Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 1.0 mile in a direct line north of the site and are not typically found near the project area.

3.9.1.3 Nongame Species

Biorefinery

A diversity of nongame species (e.g., small mammals, passerines, raptors, and reptiles) occupy a wide range of trophic levels and habitat types within the region. Habitat found on the site (e.g., sagebrush shrubland) supports a variety of resident and seasonal nongame species. Nongame mammals include such species as deer mouse, western harvest mouse, desert woodrat, and Ord's kangaroo rat (Hall 1995). They provide a substantial prey base for the predators including mammals (e.g., coyote, badger, skunk); raptors (eagles, hawks, falcons, owls, vultures); and reptile species found near the site. Representative birds that occur within the region are discussed in Section 3.10, Special Status Species.

Several bat species may occur near the site, including pallid bat, big brown bat, western pipistrelle, Yuma myotis, California myotis, western small-footed myotis, long-legged myotis, Brazilian free-tailed bat, and Townsend's big-eared bat (Bradley et al. 2006). The pallid bat and Brazilian free-tailed bat are Nevada protected species and the Townsend's big-eared bat is a Nevada sensitive species (NDOW 2008d). These species are discussed in more detail in Special Status Species (Section 3.10).

Other important nongame species that are found near the site include several species of reptiles and amphibians. These species include the Great Basin whiptail, Great Basin rattlesnake, and Great Basin spadefoot (NDOW 2008b).

Feedstock Processing Facility

The potential for nongame species near the Feedstock Processing Facility site is similar to the Biorefinery site.



3.9.1.4 Migratory Birds including Raptors

See Section 3.10, Special Status Species, regarding a discussion on migratory birds and Birds of Conservation Concern (BCC) protected under the Migratory Bird Treaty Act (MBTA).

3.9.1.5 Fisheries

Biorefinery

No fisheries resources are found near the Biorefinery project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river's distance of approximately 4.5 miles in a direct line north of the site.

Feedstock Processing Facility

No fisheries resources are found near the Feedstock Processing Facility project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river's distance of approximately 1.0 mile in a direct line north of the site.

3.9.2 Environmental Effects – Wildlife and Fisheries

3.9.2.1 Proposed Action

Potential effects include surface disturbance or alteration of habitats, increased habitat fragmentation, animal displacement, changes in species composition, increased mortality due to poaching and harassment, and the increased likelihood of animal/vehicle collisions from increased traffic in the area. The severity of these effects on terrestrial wildlife depends on factors such as the sensitivity of the species, seasonal use patterns, type and timing of activity, and physical parameters (e.g., topography, cover, forage, and climate).

Direct effects would be the surface disturbance of approximately 33.8 acres of potential wildlife habitat. However, since both sites are zoned for industrial development, this impact would probably occur regardless of the development of the IBPE.

Big Game Species

Biorefinery

Construction of Biorefinery would result in long-term disturbance (greater than 20 years) and removal of mule deer habitat, and further fragment the limited habitat in the area for big game. The Biorefinery also would result in increased noise levels, human presence, proliferation of weeds, and dispersion of dust during construction, which also would affect big game that may be in the area. Big game animals would likely decrease their use within 0.5 mile of surface disturbance activities (Ward et al. 1980). Big game would be displaced to adjacent habitats in the short term and to areas outside the TRI Center in the long term as more development occurs in the TRI Center and associated nearby industrial sites. However, due to the current low likelihood of big game using the project area and availability of habitat outside the Biorefinery site, impacts to big game are expected to be minimal.

Feedstock Processing Facility

Direct effects to big game species would be the same as described for the Biorefinery, with the exception that Bighorn Sheep habitat would be removed, further fragmenting habitat in the area for big game.

Small Game Species

Biorefinery

The Biorefinery would result in the incremental disturbance and removal of habitat for small game (upland game birds, small mammals) and increased habitat fragmentation. Direct effects to small game species



could include nest or burrow abandonment or loss of eggs or young. It is not likely that the expected losses would have a measurable effect on species populations due to the availability of suitable habitat outside the project area. Development also would discourage small game species as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction.

Feedstock Processing Facility

Direct effects to big game species would be the same as described for the Biorefinery.

Nongame Species

Biorefinery

Direct impacts to nongame species would include disturbance and removal of habitat and increased habitat fragmentation. Impacts also could result in mortalities of less mobile species (e.g., small mammals, reptiles, amphibians, and invertebrates), nest abandonment, and loss of eggs or young as a result of crushing from vehicles and heavy equipment. Nongame species also would be less likely to use the site area as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. Impacts to nongame species populations are expected to be minimal due to availability of habitat outside the project area. Given that the Biorefinery site is zoned for heavy industrial development, this impact would likely occur regardless of facility construction.

Feedstock Processing Facility

Effects to nongame species would be the same as described for the Biorefinery.

Migratory Birds including Raptors

See Section 3.10.2.1, Special Status Species, for a discussion of environmental consequences to migratory birds and BCC species protected under the MBTA.

Fisheries

Biorefinery

There would be no effects to fisheries resources from the proposed Biorefinery, due to a lack of perennial water sources near the Biorefinery site. Facility-related activities would not affect fisheries habitat in the Truckee River.

Feedstock Processing Facility

Effects to fisheries would be the same as described for the Biorefinery.

3.9.2.2 No Action Alternative

A portion of both sites are already disturbed as a result of filling and grading. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. Since both sites are zoned for heavy industrial development, removal of potential wildlife habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.



3.10 Special Status Species

3.10.1 Affected Environment

Federally Listed Species

Biorefinery

Special status species include species listed by the USFWS as threatened, endangered, proposed and/or candidate species under the Endangered Species Act of 1973, species identified by USFWS as BCC and wildlife species identified by State of Nevada as endangered, threatened, and sensitive (NAC 501.100-503.104). The USFWS' BCC includes birds that are protected under the MBTA of 1918. Information regarding special status species near the site was obtained from a review of existing published sources, USFWS, NDOW file information, and NNHP database information.

There are no federally listed plant or wildlife species known to occur at the sites. According to the Nevada Natural Heritage Database (2004), the nearest occurrence of a Federal threatened/endangered species is approximately 4 miles in a direct line to the west-northwest of the Biorefinery site for the Northwestern pond turtle, a species that is not likely to occur at the site due to lack of habitat (i.e., water sources).

Feedstock Processing Facility

The affected environment for federal listed species near the Feedstock Processing Facility is the same as described for the Biorefinery. According to the NNHP Database (2004), the nearest occurrence of a federal threatened/endangered species is approximately 4 miles in a direct line northeast of the Feedstock Processing Facility for the Northwestern pond turtle, a species that is not likely to occur in the project vicinity due to lack of habitat (i.e., water sources).

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Based on evaluation of habitat requirements and/or known distribution a total of six state listed special status wildlife species were identified as having the potential to occur near the site (NDOW 2008d; USFWS 2008). These species are listed as either Nevada State Protected (NV-SP) or Nevada State Protected Sensitive (NV-SPS). These species include three mammals: the pallid bat, Brazilian free-tailed bat, and Townsend's big-eared bat; and three bird species: loggerhead shrike, sage thrasher, and Brewer's sparrow. Details on each species are described in the following subsections. There are no occurrences of state listed or sensitive plant species near the site.

Seven species have been identified as Birds of Conservation Concern¹ by the USFWS. Two of these also are state listed bird species, the loggerhead shrike and Brewer's sparrow. Five other BCC species also may occur at the site: Ferruginous hawk, Burrowing owl, gray vireo, Virginia's warbler, and the sage sparrow.

Feedstock Processing Facility

The affected environment for state listed, protected, sensitive, and migratory bird treaty act species near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Mammals

Biorefinery

The pallid bat (NV-SP) is a year-round resident in Nevada. Found primarily at low and mid elevations (1,300 to 8,400 feet), this species occupies a variety of habitats such as piñon-juniper, blackbrush, creosote,

¹ For MBTA, the USFWS typically places the highest priority on BCC (USFWS 2002).



sagebrush, and salt desert scrub (Bradley et al. 2006). This species feeds primarily on large ground-dwelling arthropods (e.g., scorpions, centipedes, grasshoppers), but also feeds on large moths (Bradley et al. 2006). The pallid bat is a colonial species, roosting in groups of up to 100 individuals (Arizona Game and Fish Department [AGFD] 1993). Roost sites consist of rock outcrops, mines, caves, hollow trees, buildings, and bridges (AGFD 1993; Bradley et al. 2006). The pallid bat is intolerant of roost sites in excess of 40 degrees Celsius (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near both sites is considered high.

The Townsend's big-eared bat (NV-SPS) is a year-round resident found throughout Nevada from low desert to high mountain habitats (690 to 11,400 feet in elevation) (Bradley et al. 2006). The Townsend's big-eared bat primarily occurs in piñon-juniper, mountain mahogany, white fir, blackbrush, sagebrush, salt desert scrub, agricultural lands, and urban habitats (Bradley et al. 2006). This species prefers caves, mines, and buildings that maintain stable temperatures and airflow for nursery colonies, bachelor roosts, and hibernacula (Harvey et al. 1999). It does not make major migrations and appears to be relatively sedentary, not traveling far from summer foraging grounds to winter hibernation sites (Harvey et al. 1999). Its distribution seems to be determined by suitable roost and hibernation sites, primarily caves and mines. This bat is believed to feed entirely on moths (Harvey et al. 1999) and gleans insects from foliage and other surfaces (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

The Brazilian free-tailed bat (NV-SP) is found throughout Nevada in a wide variety of habitats ranging from desert scrub to high elevation mountain habitats (680 to 8,200 feet in elevation) (Bradley et al. 2006). This species roosts in a variety of structures including cliff faces, caves, mines, buildings, bridges, and hollow trees. Some caves are used as long-term transient stopover roosts during migration (Bradley et al. 2006). The Brazilian free-tailed bat is known to travel long distances to foraging areas and often forages at high altitudes. This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

Feedstock Processing Facility

The affected environment for special status mammals near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Birds

Biorefinery

Birds listed as BCC in the Great Basin Region that are potential breeders near the site include ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, and sage sparrow.

Although suitable nesting and foraging habitat is present within and near the site, the likelihood of nesting ferruginous hawks is very low due to industrial development in the vicinity. Ferruginous hawks are sensitive to disturbance and therefore typically nest away from developed areas (Schmutz 1984; White and Thurow 1985). Burrowing owls may nest near both sites, especially in areas with abandoned small mammal burrows.

Loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, sage thrasher, and sage sparrow are neotropical migrants that may occur near the site from spring through early fall. Their breeding season is approximately April 15 through August 1.

The loggerhead shrike (NV-SPS) is a common resident throughout Nevada. This species is found in open grasslands along valley floors and foothills of the Great Basin. In Nevada, it is commonly found in scrub



habitat types such as sagebrush and greasewood. Loggerhead shrikes prefer shrubs or small trees for nesting, but nesting also can occur in piñon-juniper woodlands. This species can be found perching on wire, fences, or poles (National Geographic Society [NGS] 1983). There is suitable nesting and foraging habitat near the site. The potential for this species to occur near the site is considered high.

The sage thrasher (NV-SPS), Brewer's sparrow (NV-SPS), gray vireo (BCC), Virginia's warbler (BCC), and sage sparrow (BCC) are found throughout southern and western Nevada in low elevation habitats such as desert scrub and sagebrush grasslands. These species occur less frequently in mountain shrub habitats. These species nests near the ground under sagebrush and other shrubs (NGS 1983). Suitable nesting and foraging habitat exists near the site. The potential for these species to occur near both sites is considered high.

Special Status Birds

The affected environment for special status birds near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

3.10.2 Environmental Effects – Special Status Species

3.10.2.1 Proposed Action

Federally Listed Species

Biorefinery

Since there are no federally listed plant or wildlife species at either site, no impacts to federally listed species are anticipated.

Feedstock Processing Facility

Effects to federally listed species would be the same as described for the Biorefinery.

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Impacts to special status wildlife species from surface disturbance would parallel those described in Section 3.9.2, resulting from the long-term removal of approximately 19.4 acres of potential habitat. These impacts would last until the facilities are decommissioned (estimated at 30 years), successful reclamation would be completed, and vegetation would be reestablished. Given that both sites are zoned for industrial development, this impact would probably occur regardless of the facilities. Further, if the facilities are decommissioned it would be likely that another industrial plant would occupy the site.

Feedstock Processing Facility

Effects to state listed, protected, sensitive, and migratory bird treaty act species would be the same as described for the Biorefinery. Effects would result from the long-term removal of approximately 14.4 acres of potential habitat.

Special Status Plants

Biorefinery

Since there are no state listed or sensitive plant species at the sites, no impacts to special status plant species would be anticipated.

Feedstock Processing Facility

Effects to special status plants would be the same as described for the Biorefinery.

Special Status Mammals

Biorefinery

Potentially suitable foraging habitat for the three species (pallid bat, Townsend's big-eared bat, and Brazilian free-tailed bat) exists near the site. Construction and operation of the facility could result in indirect effects to local bat species and their habitat. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 19.4 acres of habitat. However, due to a lack of roosting habitat near the site, impacts to sensitive bat species are expected to be minimal. Given that both sites are zoned for industrial development, this impact would probably occur regardless of the facility.

Feedstock Processing Facility

Effects to special status mammals would be the same as described for the Biorefinery. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 14.4 acres of habitat.

Special Status Birds

Biorefinery

As discussed in Section 3.10.1 above seven species listed as BCC are potential breeders near the Biorefinery site: ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, and sage sparrow; one species, the sage thrasher, is a state listed special wildlife species but not a BCC.

Since construction and operation of the Biorefinery would result in the long-term removal of approximately 19.4 acres of potentially suitable breeding habitat, impacts to breeding pairs of these species may occur. Noise and human presence also could deter use of the area by these species. During the breeding season (March 15 through July 31), development activities also could result in the abandonment of a nest site or territory or the loss of eggs or young, resulting in the loss of productivity for the breeding season. Development also would fragment habitat as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. However, the degree of these potential effects would depend on a number of variables including the location of the nest site, the species' relative sensitivity, breeding phenology, and possible topographic shielding. As mentioned above in Section 3.8.1 the Biorefinery site is classified as Inter-mountain Basins Big Sagebrush Shrubland. This ecological system occurs throughout the western U.S. and there is nothing special or unique about the project area habitat, particularly in view of its already disturbed nature. Habitat for these species also exists near the Biorefinery site.

Potential impacts to breeding birds from development activities would be minimized during construction by avoiding removal of migratory bird habitat on currently undisturbed lands on the sites to the extent possible between March 15 and July 31. Should removal of habitat be required during this period, Sierra BioFuels would coordinate with the NDOW and the USFWS to determine if surveys and appropriate mitigation, such as buffer zones around occupied nests, may be needed. As a result of these measures and due to the large amount of suitable habitat in the vicinity of the sites and beyond the TRI Center, impacts to species populations are expected to be minimal. Finally given that the site is zoned for industrial development, this impact would probably occur regardless of the facility.

Feedstock Processing Facility

Effects to special status birds would be the same as described for the Biorefinery. Construction and operation of the Feedstock Processing Facility would result in the long-term removal of approximately 14.4 acres of potentially suitable breeding habitat.

3.10.2.2 No Action Alternative

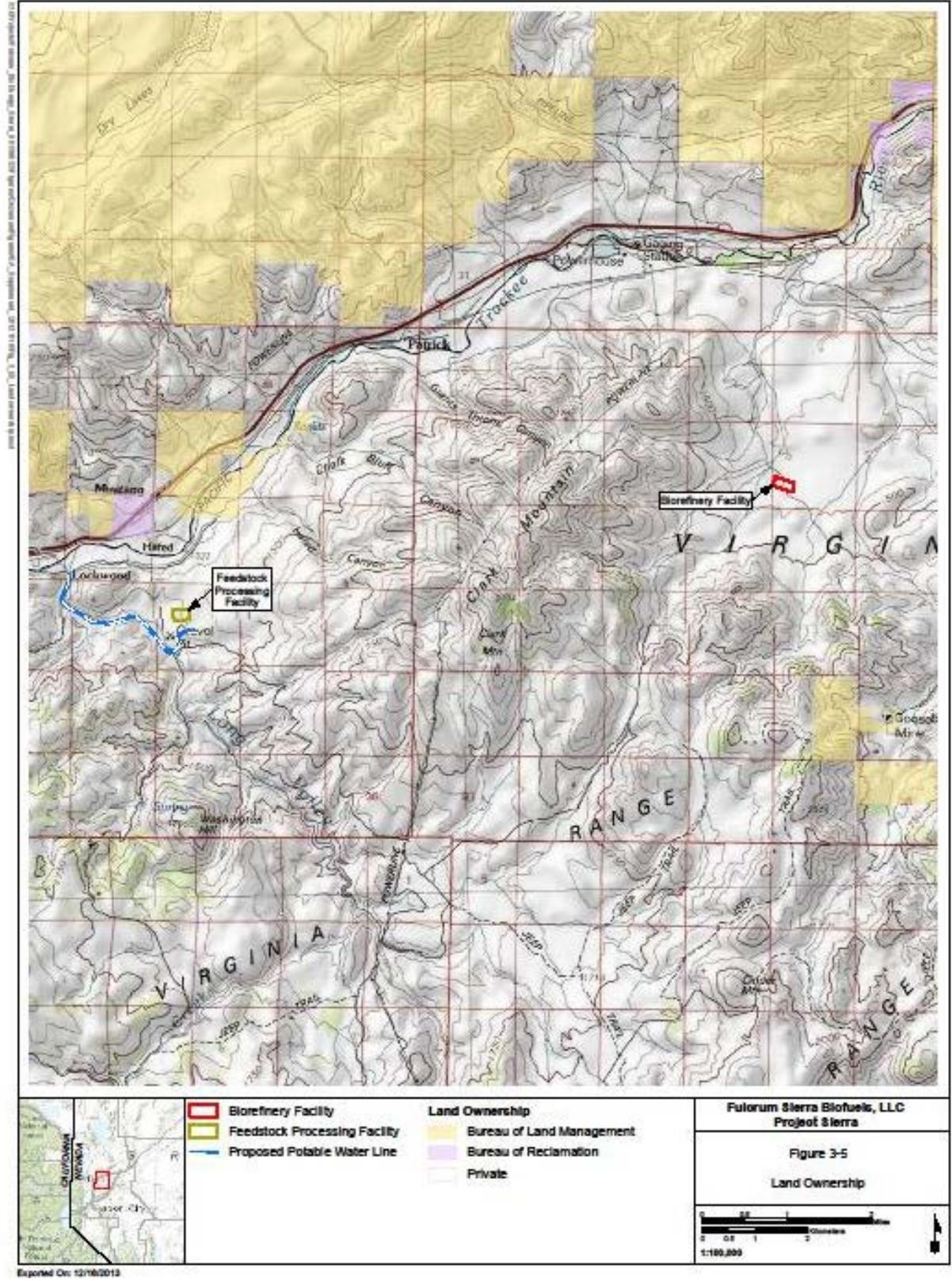
A portion of both sites are already disturbed as a result of filling, clearing, grading, and other surface disturbing activities. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. Since both sites are zoned for heavy industrial development, removal of potential habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.

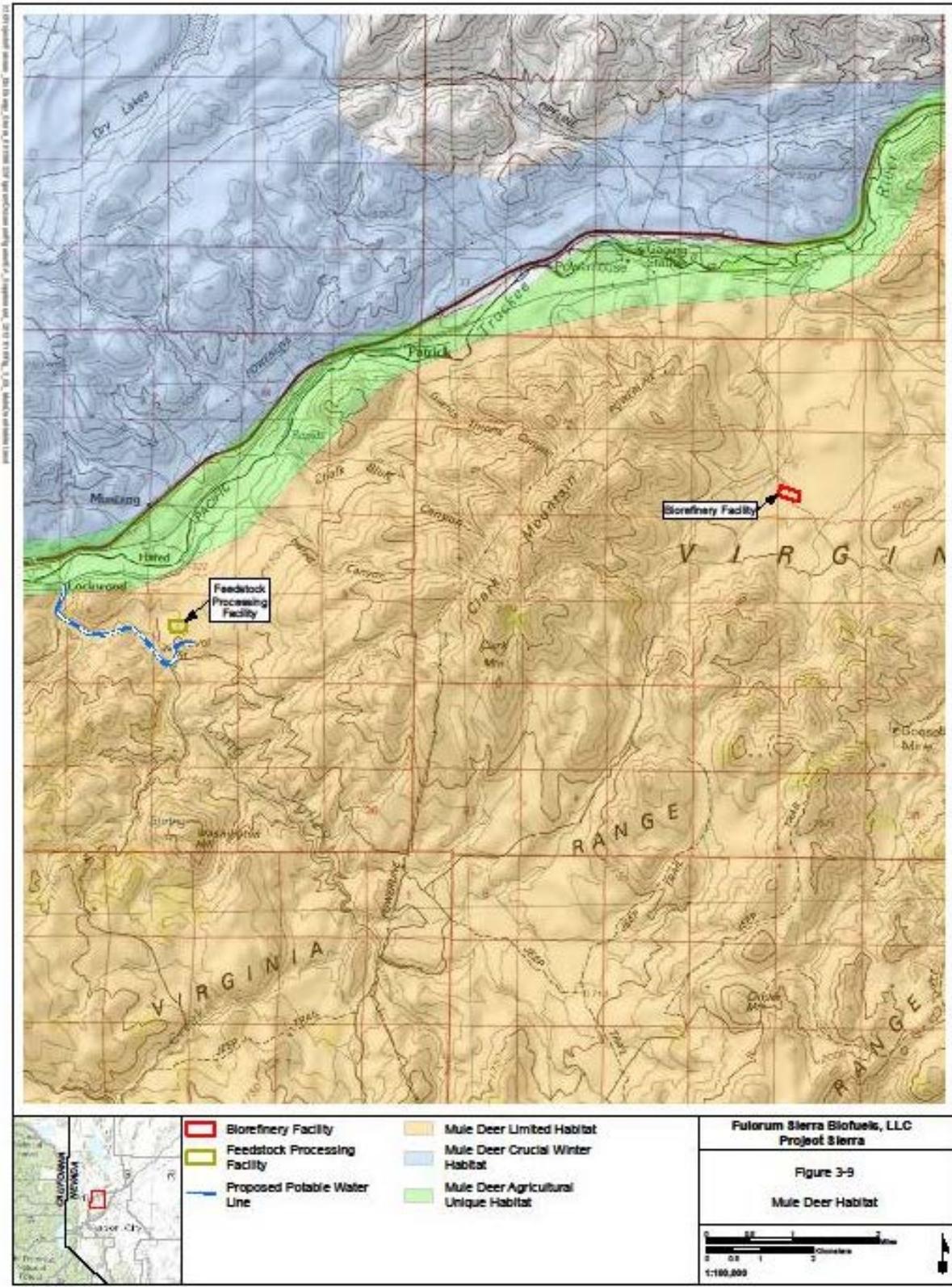


	<ul style="list-style-type: none">  Biorefinery Facility  Feedstock Processing Facility  County Boundary  Interstate Highway  US Highway  Major Road 	<p style="text-align: center;">Fulcrum Sierra Biofuels, LLC Project Sierra</p> <p style="text-align: center;">Figure 3-1 Site Location</p> <div style="text-align: center;">  <p>0 0.5 1 2 Miles 0 0.5 1 2 Kilometers</p> <p>1:100,000</p>  </div>
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Exported On: 11/19/2013







Graber, Steve

From: Bruce Macdonald <bmacdonald@slrconsulting.com>
Sent: Wednesday, June 11, 2014 11:49 PM
To: Graber, Steve; Jeanne Benedetti
Cc: Schmude, Erik
Subject: FW: Request for Concurrence

See the e-mail below from NDOW. Concurrence at least. Note the comment about observing the pond.

Thanks
BRUCE

From: Mark Freese [<mailto:markfreese@ndow.org>]
Sent: June 11, 2014 11:22 AM
To: Bruce Macdonald
Subject: RE: Request for Concurrence

Bruce,

Thanks for the opportunity to review and for addressing our previous comments. This area is currently occupied by bighorn sheep (BHS) for your information. No additional measures are necessary as a result of this BHS designation. We do recommend not providing water for feral horses or wildlife. Additionally, if wildlife mortalities are occurring with your artificial ponds, we recommend that you contact us for more information on preventing mortalities (e.g. providing escape ramps or appropriate pond grading).

Let us know if you have any questions.

Thanks

Mark Freese
Western Region Supervising Habitat Biologist
Nevada Department of Wildlife
1100 Valley Road
Reno, NV 89512
P: (775) 688-1145
F: (775) 688-1889

"...I feel that the high tension at which the average man has been living is wrecking entirely too many nervous systems. Hunting and fishing is the best nerve tonic I know, and I believe that a greater opportunity for the average citizen to engage in this type of outdoor recreation would greatly promote both the health and happiness of our people." A. Willis Robertson

This message is intended only for the named recipient. If you are not the intended recipient you are notified that disclosing, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited.

From: Bruce Macdonald [<mailto:bmacdonald@slrconsulting.com>]
Sent: Tuesday, May 20, 2014 10:10 AM
To: Mark Freese
Subject: FW: Request for Concurrence

Mark,
Evidently I had a wrong e-mail, and am forwarding
Thanks

As noted in Section 3.9.1 and 3.10.1 of the Draft EA (excerpts provided in **Attachment 2**), informal and/or formal consultation with the USFWS was not initiated due to the absence of federally listed plant or wildlife species at either APE site. Based on these findings and combined with the existing disturbed landscape on both APE sites, we propose that the project is not likely to adversely affect a listed species or designated critical habitat and the AFRL respectfully requests written concurrence from the USFWS within 15 days of receipt of this letter.

The AFRL and Sierra BioFuels team look forward to your written concurrence. AFRL's Program Manager is James Neely (937) 904-4374 or James.Neely@wpafb.af.mil. AFRL's Title III action officer on this effort is Mr. Warren Assink, (937) 255-3480, warren.assink@us.af.mil.

Please do not hesitate to call or e-mail me at (970) 999-3977 or bmacdonald@slrconsulting.com if you have if you have questions regarding this request.

Regards



Bruce C. Macdonald
Principal Scientist

Attachments

cc: James Neely, AFRL
Warren Assink, AFRL
Jeanne Benedetti, Fulcrum Sierra BioFuels, LLC



May 20, 2014

Ms. Marcy Haworth
 US Fish & Wildlife Service
 Nevada Fish & Wildlife Office
 1340 Financial Blvd., Suite 234
 Reno, Nevada 89502

**RE: Request for Evaluation and Concurrence
 Draft Environmental Assessment for Fulcrum Sierra BioFuels, LLC**

Dear Ms. Haworth

On behalf of the US Air Force Air Force Research Laboratory (AFRL), and as part of that agency's requirements under Section 7 of the Endangered Species Act, we are currently seeking concurrence from the U.S. Fish and Wildlife Service (USFWS) regarding the data and findings in the Draft Environmental Assessment (EA) that address wildlife and special status species for two sites in Storey County, Nevada that are proposed for construction of industrial operations.

The AFRL may be partnering with a commercial company, Fulcrum Sierra BioFuels, LLC (Sierra BioFuels) as an awardee under Phase II of the Advanced Drop-In Biofuel Production Project (ADBPP), to develop an Integrated Biofuel Production Enterprise (IBPE) in Storey County, Nevada. In anticipation of that potential partnering, AFRL has requested that we solicit specific information and advice regarding the proposed project Area of Potential Effect (APE), which has been described in a Draft EA that is currently being prepared for the IBPE on behalf of the AFRL. A brief description of the ADBPP is provided in **Attachment 1**.

The proposed IBPE will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites, each zoned "1-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center near the community of McCarran, approximately 20 miles east of Reno, Nevada. An overview of the proposed IBPE is provided in **Attachment 2**.

As discussed on May 19, 2014, we have reviewed the USFWS web site and examined the "Nevada Protected Species by County" data in the Information, Planning, and Conservation (IPaC) system specific to Storey County, Nevada. The IPaC system listed only two fish species for Storey County, both in the Truckee River, the Cui-ui (*Chasmistes cujus*) and the Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*). No critical habitat was indicated for either of the two APE sites. Since the IBPE does not take water from the Truckee River or discharge to any water body, there is no effect from the construction or operation of the IBPE on the listed species.



Attachment 1

ADBPP Overview.

The Advanced Drop-In Biofuel Production Project (ADBPP) is a Department of Defense (DoD)-led multi-agency effort to develop a viable commercial-scale Integrated Biofuel Production Enterprise (IBPE) that has a capacity of to produce at least 10 million gallons per year of neat biofuel. The effort intends to support the establishment of a domestic commercial-scale manufacturing facility that produces aviation and marine diesel biofuels from sustainable biomass feedstock. The DoD has indicated intention to purchase drop-in replacement biofuels that meet approved product specifications, meet the provisions of the Energy Independence and Security Act (EISA) Section 526, and can utilize the existing infrastructure, and are deliverable to the DoD fuel supply system fully blended with conventional petroleum product counterparts.



Attachment 2

Fulcrum Sierra BioFuels, LLC

Project Overview and Analysis of Fisheries, Wildlife, and Special Status Species

(excerpts from Attachment 3 - Draft Environmental Assessment)

Project Overview

Project Description

Fulcrum Sierra BioFuels, LLC (Sierra BioFuels), intends to construct a Feedstock Processing Facility and a Biorefinery for the production of synthetic paraffinic kerosene (SPK) fuel from municipal solid waste (MSW) from which recyclables and non-biomass components are removed (feedstock). The Biorefinery would use steam-reforming gasification, Fischer-Tropsch (FT) and fuels upgrading technologies (“gas-to-liquids” or “GTL”) to convert nearly 200,000 tons of feedstock per year into approximately 12.3 million gallons of SPK fuel. The Biorefinery would be located on approximately 19.4 acres of privately owned land within the Tahoe-Reno Industrial Center (TRI Center), in McCarran, Storey County, Nevada. The Feedstock Processing Facility would be located approximately 15 roadway miles to the southwest of the Biorefinery on approximately 14.4 acres, privately owned land, adjacent to the Lockwood Regional Landfill.

Biorefinery

The site for the Biorefinery would be located entirely on approximately 19.4 acres of privately owned land within the TRI Center, near the community of McCarran, Storey County, Nevada. A plot plan is depicted in **Figure 2-1**. There are no existing facilities or utilities on the site, but the site has been partially disturbed by clearing, grading, and the use of fill material prior to Sierra BioFuels’ purchase of the property. The property is bordered by undeveloped land to the west and south, a railroad line borders the property on the north, and Peru Drive, a major TRI Center improved road, to the east. The existing rail and road systems would provide both rail and truck/car access to the site. The Biorefinery and supporting infrastructure would occupy the entire 19.4 acre parcel, which would be fenced along the perimeter.

The Biorefinery’s process uses steam reforming gasification, FT and GTL technologies to convert feedstock into SPK fuel. The Biorefinery would be designed to convert nearly 200,000 tons of feedstock per year into approximately 12.3 million gallons of SPK fuel.

The feedstock would be converted into SPK fuel using a four-step process comprised of feedstock preparation, steam reforming gasification, FT liquids synthesis and hydroprocessing/fractionation upgrading. In the first step, feedstock preparation, MSW would be delivered to the Feedstock Processing Facility and be prepared, sorted, and baled into feedstock. The second step, steam reforming gasification, the feedstock would be converted into a syngas. In the third step, FT liquids synthesis, the syngas would be catalytically converted into FT liquid hydrocarbons using conventional fixed bed catalyst FT reactors. In the fourth and final step, hydroprocessing/fractionation upgrading, the FT liquids are then upgraded to SPK fuel. A portion of the purge gas would be used as fuel gas in a utility boiler to produce steam to be used in the Biorefinery, indirectly offsetting a portion of electric power requirements.

Feedstock Processing Facility

The Feedstock Processing Facility would be designed to process non-hazardous, MSW into feedstock. The Feedstock Processing Facility would be located on approximately 14.4 acres, in the industrial area near the



community of Lockwood, Storey County, Nevada, adjacent to the Lockwood Regional Landfill located at 2401 Canyon Way, Storey County, as shown in **Figure 3-1**, in Chapter 3.0 of the EA, and provided below.

After processing the MSW at the Feedstock Processing Facility, the following three major categories of materials will be transported offsite:

- **Baled feedstock:** The baled MSW would be transported to the Biorefinery on flatbed trucks with approximately 26 bales per truckload. Approximately 770 tons of feedstock would be delivered to the Biorefinery daily, five days per week. This equates to 20 truckloads each day;
- **Recoverable material:** Recovered material, including but not limited to ferrous and nonferrous metals, cardboard, plastics, paper, and other recyclable materials would be recovered from the MSW and shipped to the commodities markets; and
- **Residual material:** Residual material not used as feedstock or recovered for recycling (concrete, dirt, fines, etc.) would be transported to and disposed of at the Lockwood Regional Landfill. A truck loading conveyor would load and distribute residual material into transfer trailers for shipment to the landfill.

Selected Sections of the Draft EA

3.9 Wildlife and Fisheries

3.9.1 Affected Environment

The following descriptions of both resident and migratory wildlife include species that have either been documented near the project area of the Biorefinery site and the Feedstock Processing Facility site or those that may occur in western Nevada based on habitat associations. Wildlife species occurring near the Site are typical of the intermountain semi-desert shrublands of the Truckee River valley. Information regarding wildlife species and habitat near the site was obtained from a review of existing published sources, U.S. Fish and Wildlife Service (USFWS), NDOW file information, and Nevada Natural Heritage Program (NNHP) database information. Formal consultation with the USFWS was not initiated due to the absence of federally listed plant or wildlife species at either site, as noted in Section 3.10. Additionally, consultation was not initiated with the NDOW as a result of the limited amount of habitat affected the industrial zoning and nature of the site.

3.9.1.1 Big Game

Biorefinery

The Biorefinery project area does not contain any important big game habitats such as migration corridors, critical winter habitat, or calving/fawning/lambing habitats (NDOW 2008a,c). Big game use of the site is low, based on scat present, and consists mainly of mule deer occasionally wandering through the site. Big game population numbers in the western Nevada fluctuate slightly from year-to-year based on weather and habitat conditions. Water availability and amount of quality habitat are the limiting factors to big game populations within the project area. Human presence, water availability, forage quality, cover, and weather patterns typically determine the level of use and movement of big game species.

The Biorefinery site has been mapped as containing Mule Deer Limited Range (**Figure 3-9**) and Potential Bighorn Sheep Range (**Figure 3-10**).

Mountain lions and black bears also are classified as a big game species in Nevada (NDOW 2008a,b). Both of these species are fairly common in western Nevada and typically occupy the higher elevations



surrounding the site; although they may travel through the project area if prey populations are present (NDOW 2008a,b).

Feedstock Processing Facility

The potential for big game near the Feedstock Processing Facility site is similar to the Biorefinery, with the exception that potential bighorn sheep range is present within the Feedstock Processing Facility site (NDOW 2008a,c), but due to the industrial development in the vicinity, bighorn sheep are not likely to use the site.

3.9.1.2 Small Game

Biorefinery

Small game species that could potentially occur near the Biorefinery site include chukar, mourning dove, cottontail, and black-tailed jackrabbit (NDOW 2008b). Chukar are mainly found west of the site, especially on rocky ridges and hillsides with cheatgrass (NDOW 2008b). Mourning doves are found in wide range of habitats in close proximity to water and are most likely to occur near both sites during spring, summer, and early fall. Furbearers that may occur near the Site include badger, red fox, and bobcat (NDOW 2008b).

Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 4.5 miles in a direct line north of the site and are not typically found near the Biorefinery project area.

Feedstock Processing Facility

The potential for small game near the Feedstock Processing Facility site is similar to the Biorefinery site. Due to lack of habitat, waterfowl or shorebird concentrations are limited to ponds, springs, and wetlands located along the Truckee River approximately 1.0 mile in a direct line north of the site and are not typically found near the project area.

3.9.1.3 Nongame Species

Biorefinery

A diversity of nongame species (e.g., small mammals, passerines, raptors, and reptiles) occupy a wide range of trophic levels and habitat types within the region. Habitat found on the site (e.g., sagebrush shrubland) supports a variety of resident and seasonal nongame species. Nongame mammals include such species as deer mouse, western harvest mouse, desert woodrat, and Ord's kangaroo rat (Hall 1995). They provide a substantial prey base for the predators including mammals (e.g., coyote, badger, skunk); raptors (eagles, hawks, falcons, owls, vultures); and reptile species found near the site. Representative birds that occur within the region are discussed in Section 3.10, Special Status Species.

Several bat species may occur near the site, including pallid bat, big brown bat, western pipistrelle, Yuma myotis, California myotis, western small-footed myotis, long-legged myotis, Brazilian free-tailed bat, and Townsend's big-eared bat (Bradley et al. 2006). The pallid bat and Brazilian free-tailed bat are Nevada protected species and the Townsend's big-eared bat is a Nevada sensitive species (NDOW 2008d). These species are discussed in more detail in Special Status Species (Section 3.10).

Other important nongame species that are found near the site include several species of reptiles and amphibians. These species include the Great Basin whiptail, Great Basin rattlesnake, and Great Basin spadefoot (NDOW 2008b).

Feedstock Processing Facility

The potential for nongame species near the Feedstock Processing Facility site is similar to the Biorefinery site.



3.9.1.4 Migratory Birds including Raptors

See Section 3.10, Special Status Species, regarding a discussion on migratory birds and Birds of Conservation Concern (BCC) protected under the Migratory Bird Treaty Act (MBTA).

3.9.1.5 Fisheries

Biorefinery

No fisheries resources are found near the Biorefinery project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river's distance of approximately 4.5 miles in a direct line north of the site.

Feedstock Processing Facility

No fisheries resources are found near the Feedstock Processing Facility project area due to a lack of perennial water sources. Facility related activities would not affect fisheries in the Truckee River, due to the river's distance of approximately 1.0 mile in a direct line north of the site.

3.9.2 Environmental Effects – Wildlife and Fisheries

3.9.2.1 Proposed Action

Potential effects include surface disturbance or alteration of habitats, increased habitat fragmentation, animal displacement, changes in species composition, increased mortality due to poaching and harassment, and the increased likelihood of animal/vehicle collisions from increased traffic in the area. The severity of these effects on terrestrial wildlife depends on factors such as the sensitivity of the species, seasonal use patterns, type and timing of activity, and physical parameters (e.g., topography, cover, forage, and climate).

Direct effects would be the surface disturbance of approximately 33.8 acres of potential wildlife habitat. However, since both sites are zoned for industrial development, this impact would probably occur regardless of the development of the IBPE.

Big Game Species

Biorefinery

Construction of Biorefinery would result in long-term disturbance (greater than 20 years) and removal of mule deer habitat, and further fragment the limited habitat in the area for big game. The Biorefinery also would result in increased noise levels, human presence, proliferation of weeds, and dispersion of dust during construction, which also would affect big game that may be in the area. Big game animals would likely decrease their use within 0.5 mile of surface disturbance activities (Ward et al. 1980). Big game would be displaced to adjacent habitats in the short term and to areas outside the TRI Center in the long term as more development occurs in the TRI Center and associated nearby industrial sites. However, due to the current low likelihood of big game using the project area and availability of habitat outside the Biorefinery site, impacts to big game are expected to be minimal.

Feedstock Processing Facility

Direct effects to big game species would be the same as described for the Biorefinery, with the exception that Bighorn Sheep habitat would be removed, further fragmenting habitat in the area for big game.

Small Game Species

Biorefinery

The Biorefinery would result in the incremental disturbance and removal of habitat for small game (upland game birds, small mammals) and increased habitat fragmentation. Direct effects to small game species



could include nest or burrow abandonment or loss of eggs or young. It is not likely that the expected losses would have a measurable effect on species populations due to the availability of suitable habitat outside the project area. Development also would discourage small game species as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction.

Feedstock Processing Facility

Direct effects to big game species would be the same as described for the Biorefinery.

Nongame Species

Biorefinery

Direct impacts to nongame species would include disturbance and removal of habitat and increased habitat fragmentation. Impacts also could result in mortalities of less mobile species (e.g., small mammals, reptiles, amphibians, and invertebrates), nest abandonment, and loss of eggs or young as a result of crushing from vehicles and heavy equipment. Nongame species also would be less likely to use the site area as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. Impacts to nongame species populations are expected to be minimal due to availability of habitat outside the project area. Given that the Biorefinery site is zoned for heavy industrial development, this impact would likely occur regardless of facility construction.

Feedstock Processing Facility

Effects to nongame species would be the same as described for the Biorefinery.

Migratory Birds including Raptors

See Section 3.10.2.1, Special Status Species, for a discussion of environmental consequences to migratory birds and BCC species protected under the MBTA.

Fisheries

Biorefinery

There would be no effects to fisheries resources from the proposed Biorefinery, due to a lack of perennial water sources near the Biorefinery site. Facility-related activities would not affect fisheries habitat in the Truckee River.

Feedstock Processing Facility

Effects to fisheries would be the same as described for the Biorefinery.

3.9.2.2 No Action Alternative

A portion of both sites are already disturbed as a result of filling and grading. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. Since both sites are zoned for heavy industrial development, removal of potential wildlife habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.



3.10 Special Status Species

3.10.1 Affected Environment

Federally Listed Species

Biorefinery

Special status species include species listed by the USFWS as threatened, endangered, proposed and/or candidate species under the Endangered Species Act of 1973, species identified by USFWS as BCC and wildlife species identified by State of Nevada as endangered, threatened, and sensitive (NAC 501.100-503.104). The USFWS' BCC includes birds that are protected under the MBTA of 1918. Information regarding special status species near the site was obtained from a review of existing published sources, USFWS, NDOW file information, and NNHP database information.

There are no federally listed plant or wildlife species known to occur at the sites. According to the Nevada Natural Heritage Database (2004), the nearest occurrence of a Federal threatened/endangered species is approximately 4 miles in a direct line to the west-northwest of the Biorefinery site for the Northwestern pond turtle, a species that is not likely to occur at the site due to lack of habitat (i.e., water sources).

Feedstock Processing Facility

The affected environment for federal listed species near the Feedstock Processing Facility is the same as described for the Biorefinery. According to the NNHP Database (2004), the nearest occurrence of a federal threatened/endangered species is approximately 4 miles in a direct line northeast of the Feedstock Processing Facility for the Northwestern pond turtle, a species that is not likely to occur in the project vicinity due to lack of habitat (i.e., water sources).

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Based on evaluation of habitat requirements and/or known distribution a total of six state listed special status wildlife species were identified as having the potential to occur near the site (NDOW 2008d; USFWS 2008). These species are listed as either Nevada State Protected (NV-SP) or Nevada State Protected Sensitive (NV-SPS). These species include three mammals: the pallid bat, Brazilian free-tailed bat, and Townsend's big-eared bat; and three bird species: loggerhead shrike, sage thrasher, and Brewer's sparrow. Details on each species are described in the following subsections. There are no occurrences of state listed or sensitive plant species near the site.

Seven species have been identified as Birds of Conservation Concern¹ by the USFWS. Two of these also are state listed bird species, the loggerhead shrike and Brewer's sparrow. Five other BCC species also may occur at the site: Ferruginous hawk, Burrowing owl, gray vireo, Virginia's warbler, and the sage sparrow.

Feedstock Processing Facility

The affected environment for state listed, protected, sensitive, and migratory bird treaty act species near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Mammals

Biorefinery

The pallid bat (NV-SP) is a year-round resident in Nevada. Found primarily at low and mid elevations (1,300 to 8,400 feet), this species occupies a variety of habitats such as piñon-juniper, blackbrush, creosote,

¹ For MBTA, the USFWS typically places the highest priority on BCC (USFWS 2002).



sagebrush, and salt desert scrub (Bradley et al. 2006). This species feeds primarily on large ground-dwelling arthropods (e.g., scorpions, centipedes, grasshoppers), but also feeds on large moths (Bradley et al. 2006). The pallid bat is a colonial species, roosting in groups of up to 100 individuals (Arizona Game and Fish Department [AGFD] 1993). Roost sites consist of rock outcrops, mines, caves, hollow trees, buildings, and bridges (AGFD 1993; Bradley et al. 2006). The pallid bat is intolerant of roost sites in excess of 40 degrees Celsius (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near both sites is considered high.

The Townsend's big-eared bat (NV-SPS) is a year-round resident found throughout Nevada from low desert to high mountain habitats (690 to 11,400 feet in elevation) (Bradley et al. 2006). The Townsend's big-eared bat primarily occurs in piñon-juniper, mountain mahogany, white fir, blackbrush, sagebrush, salt desert scrub, agricultural lands, and urban habitats (Bradley et al. 2006). This species prefers caves, mines, and buildings that maintain stable temperatures and airflow for nursery colonies, bachelor roosts, and hibernacula (Harvey et al. 1999). It does not make major migrations and appears to be relatively sedentary, not traveling far from summer foraging grounds to winter hibernation sites (Harvey et al. 1999). Its distribution seems to be determined by suitable roost and hibernation sites, primarily caves and mines. This bat is believed to feed entirely on moths (Harvey et al. 1999) and gleans insects from foliage and other surfaces (Bradley et al. 2006). This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

The Brazilian free-tailed bat (NV-SP) is found throughout Nevada in a wide variety of habitats ranging from desert scrub to high elevation mountain habitats (680 to 8,200 feet in elevation) (Bradley et al. 2006). This species roosts in a variety of structures including cliff faces, caves, mines, buildings, bridges, and hollow trees. Some caves are used as long-term transient stopover roosts during migration (Bradley et al. 2006). The Brazilian free-tailed bat is known to travel long distances to foraging areas and often forages at high altitudes. This species has been documented in the region (Bradley et al. 2006). Based on its known range and suitable foraging habitat near the site, the potential for this species to occur near the site is considered high.

Feedstock Processing Facility

The affected environment for special status mammals near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

Special Status Birds

Biorefinery

Birds listed as BCC in the Great Basin Region that are potential breeders near the site include ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, and sage sparrow.

Although suitable nesting and foraging habitat is present within and near the site, the likelihood of nesting ferruginous hawks is very low due to industrial development in the vicinity. Ferruginous hawks are sensitive to disturbance and therefore typically nest away from developed areas (Schmutz 1984; White and Thurow 1985). Burrowing owls may nest near both sites, especially in areas with abandoned small mammal burrows.

Loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, sage thrasher, and sage sparrow are neotropical migrants that may occur near the site from spring through early fall. Their breeding season is approximately April 15 through August 1.

The loggerhead shrike (NV-SPS) is a common resident throughout Nevada. This species is found in open grasslands along valley floors and foothills of the Great Basin. In Nevada, it is commonly found in scrub



habitat types such as sagebrush and greasewood. Loggerhead shrikes prefer shrubs or small trees for nesting, but nesting also can occur in piñon-juniper woodlands. This species can be found perching on wire, fences, or poles (National Geographic Society [NGS] 1983). There is suitable nesting and foraging habitat near the site. The potential for this species to occur near the site is considered high.

The sage thrasher (NV-SPS), Brewer's sparrow (NV-SPS), gray vireo (BCC), Virginia's warbler (BCC), and sage sparrow (BCC) are found throughout southern and western Nevada in low elevation habitats such as desert scrub and sagebrush grasslands. These species occur less frequently in mountain shrub habitats. These species nests near the ground under sagebrush and other shrubs (NGS 1983). Suitable nesting and foraging habitat exists near the site. The potential for these species to occur near both sites is considered high.

Special Status Birds

The affected environment for special status birds near the Feedstock Processing Facility site is the same as described for the Biorefinery site.

3.10.2 Environmental Effects – Special Status Species

3.10.2.1 Proposed Action

Federally Listed Species

Biorefinery

Since there are no federally listed plant or wildlife species at either site, no impacts to federally listed species are anticipated.

Feedstock Processing Facility

Effects to federally listed species would be the same as described for the Biorefinery.

State Listed, Protected, Sensitive, and Migratory Bird Treaty Act Species

Biorefinery

Impacts to special status wildlife species from surface disturbance would parallel those described in Section 3.9.2, resulting from the long-term removal of approximately 19.4 acres of potential habitat. These impacts would last until the facilities are decommissioned (estimated at 30 years), successful reclamation would be completed, and vegetation would be reestablished. Given that both sites are zoned for industrial development, this impact would probably occur regardless of the facilities. Further, if the facilities are decommissioned it would be likely that another industrial plant would occupy the site.

Feedstock Processing Facility

Effects to state listed, protected, sensitive, and migratory bird treaty act species would be the same as described for the Biorefinery. Effects would result from the long-term removal of approximately 14.4 acres of potential habitat.

Special Status Plants

Biorefinery

Since there are no state listed or sensitive plant species at the sites, no impacts to special status plant species would be anticipated.

Feedstock Processing Facility

Effects to special status plants would be the same as described for the Biorefinery.



Special Status Mammals

Biorefinery

Potentially suitable foraging habitat for the three species (pallid bat, Townsend's big-eared bat, and Brazilian free-tailed bat) exists near the site. Construction and operation of the facility could result in indirect effects to local bat species and their habitat. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 19.4 acres of habitat. However, due to a lack of roosting habitat near the site, impacts to sensitive bat species are expected to be minimal. Given that both sites are zoned for industrial development, this impact would probably occur regardless of the facility.

Feedstock Processing Facility

Effects to special status mammals would be the same as described for the Biorefinery. Indirect effects would include the long-term disturbance of foraging habitat, including approximately 14.4 acres of habitat.

Special Status Birds

Biorefinery

As discussed in Section 3.10.1 above seven species listed as BCC are potential breeders near the Biorefinery site: ferruginous hawk, burrowing owl, loggerhead shrike, gray vireo, Virginia's warbler, Brewer's sparrow, and sage sparrow; one species, the sage thrasher, is a state listed special wildlife species but not a BCC.

Since construction and operation of the Biorefinery would result in the long-term removal of approximately 19.4 acres of potentially suitable breeding habitat, impacts to breeding pairs of these species may occur. Noise and human presence also could deter use of the area by these species. During the breeding season (March 15 through July 31), development activities also could result in the abandonment of a nest site or territory or the loss of eggs or young, resulting in the loss of productivity for the breeding season. Development also would fragment habitat as a result of increased noise levels and human presence, dispersal of noxious and invasive weed species, and dust effects from construction. However, the degree of these potential effects would depend on a number of variables including the location of the nest site, the species' relative sensitivity, breeding phenology, and possible topographic shielding. As mentioned above in Section 3.8.1 the Biorefinery site is classified as Inter-mountain Basins Big Sagebrush Shrubland. This ecological system occurs throughout the western U.S. and there is nothing special or unique about the project area habitat, particularly in view of its already disturbed nature. Habitat for these species also exists near the Biorefinery site.

Potential impacts to breeding birds from development activities would be minimized during construction by avoiding removal of migratory bird habitat on currently undisturbed lands on the sites to the extent possible between March 15 and July 31. Should removal of habitat be required during this period, Sierra BioFuels would coordinate with the NDOW and the USFWS to determine if surveys and appropriate mitigation, such as buffer zones around occupied nests, may be needed. As a result of these measures and due to the large amount of suitable habitat in the vicinity of the sites and beyond the TRI Center, impacts to species populations are expected to be minimal. Finally given that the site is zoned for industrial development, this impact would probably occur regardless of the facility.

Feedstock Processing Facility

Effects to special status birds would be the same as described for the Biorefinery. Construction and operation of the Feedstock Processing Facility would result in the long-term removal of approximately 14.4 acres of potentially suitable breeding habitat.



3.10.2.2 No Action Alternative

A portion of both sites are already disturbed as a result of filling, clearing, grading, and other surface disturbing activities. Roadways and other infrastructure have already been constructed adjacent to the sites or nearby. Since both sites are zoned for heavy industrial development, removal of potential habitat on the remainder of the 33.8 acres would likely occur in the future under the No Action Alternative. Therefore, it is expected that impacts would be similar to those described under the Proposed Action.





- Biorefinery Facility
- Feedstock Processing Facility
- County Boundary
- Interstate Highway
- US Highway
- Major Road

**Fulcrum Sierra Biofuels, LLC
Project Sierra**

Figure 3-1
Site Location

0 0.5 1 2 Miles

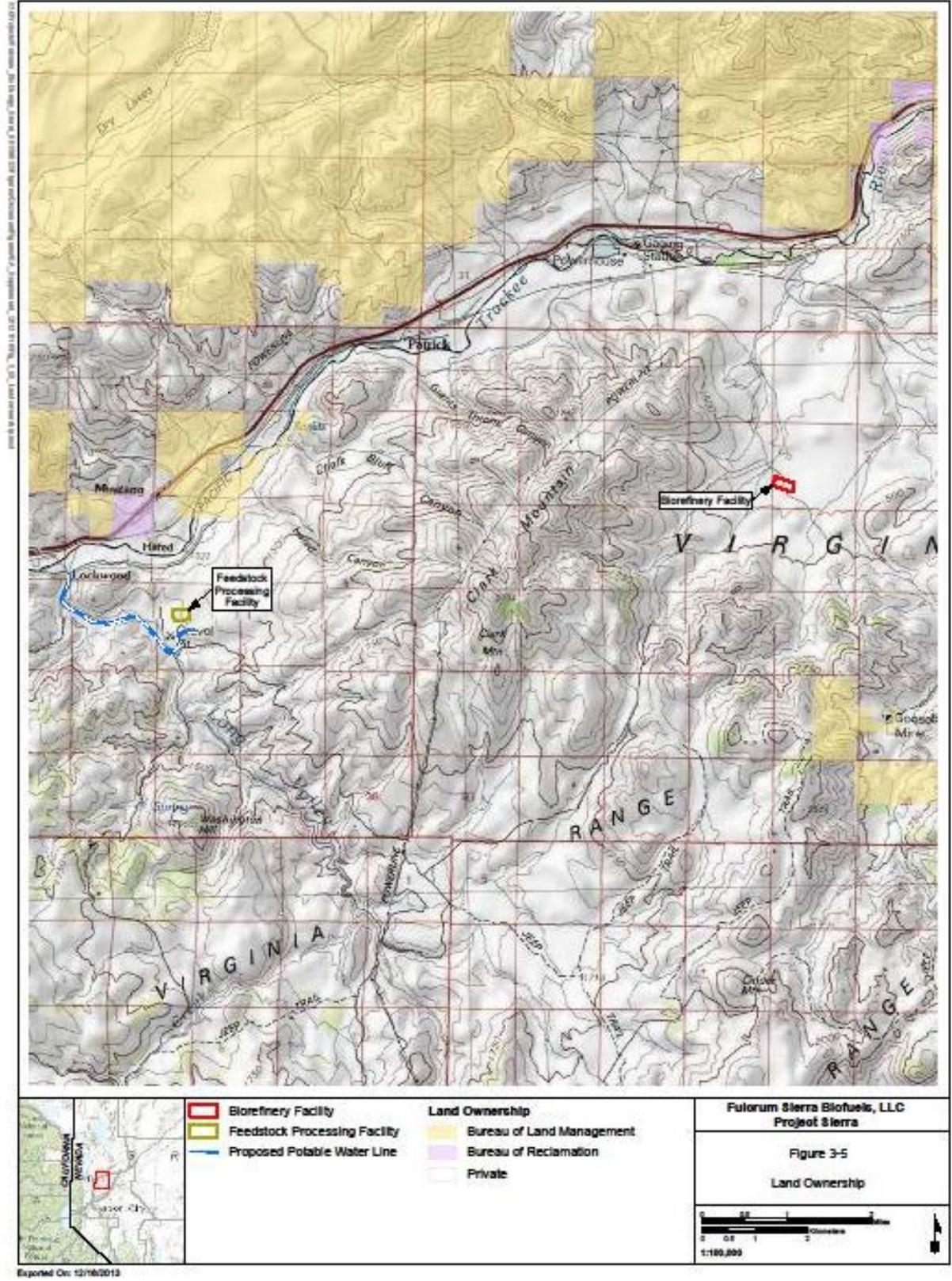
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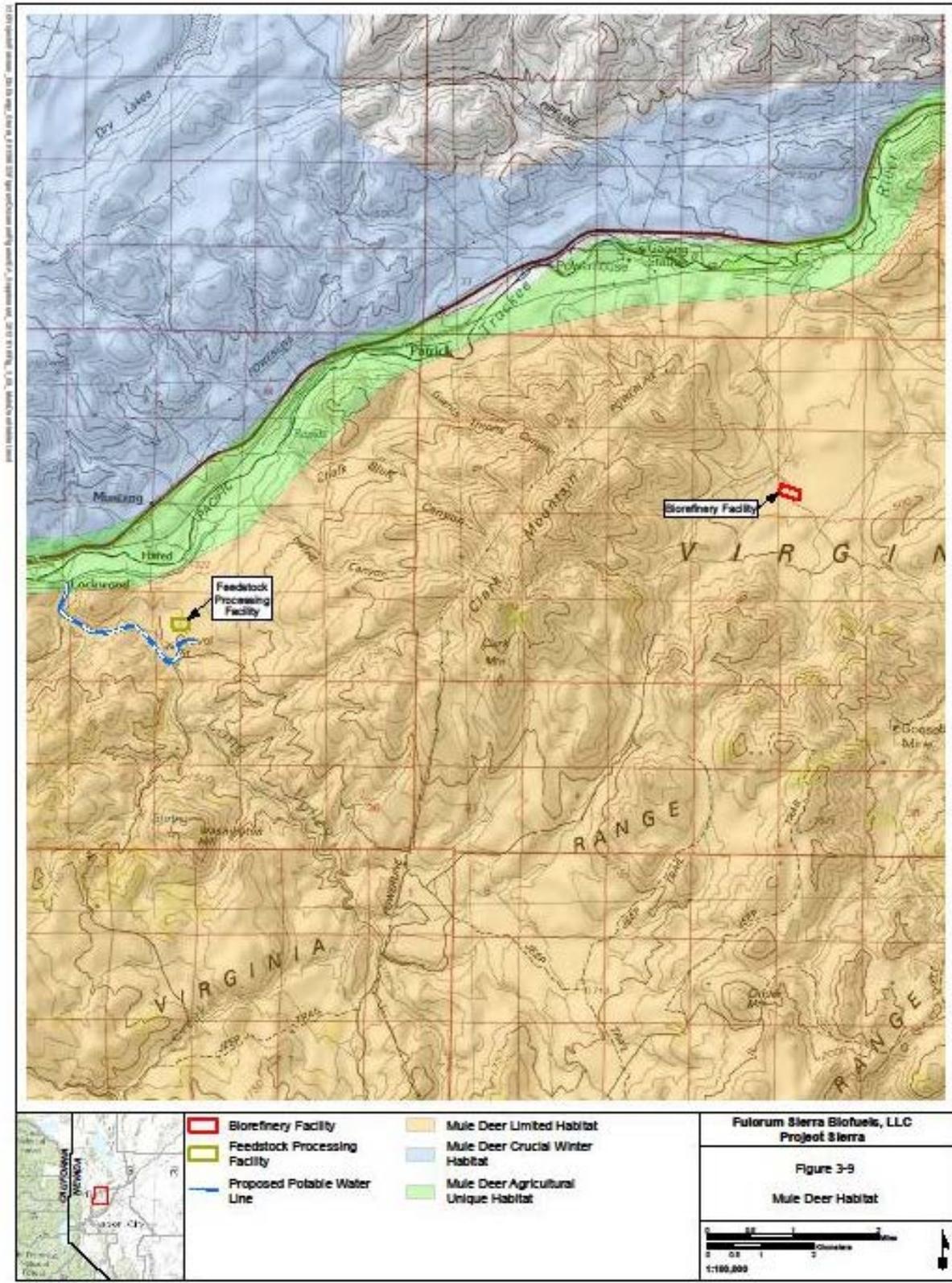
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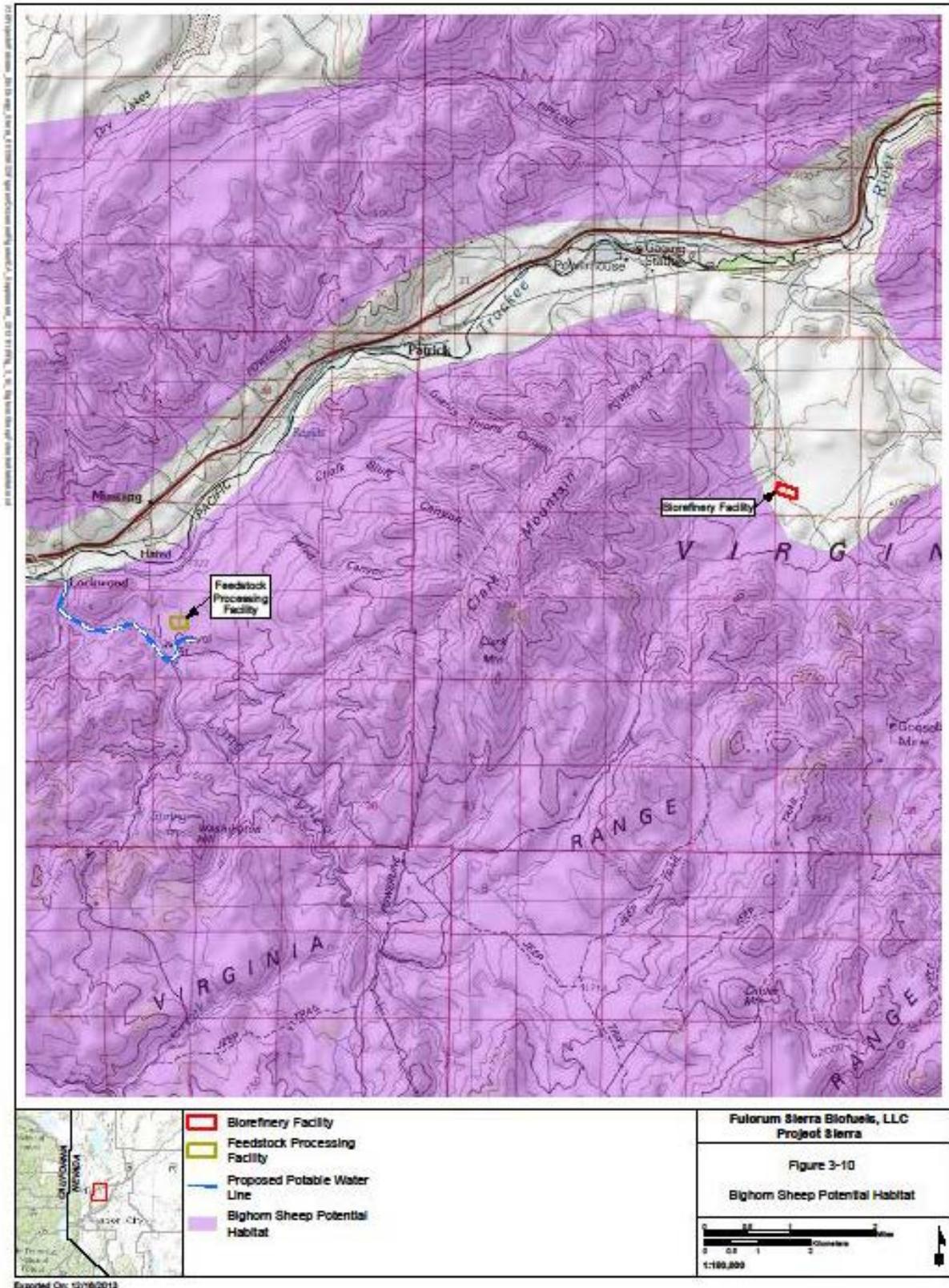
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Exported On: 11/19/2013









BRUCE

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From: Bruce Macdonald
Sent: May 20, 2014 11:06 AM
To: 'mfreese@ndow.org'
Cc: 'james.neely@wpafb.af.mil'; 'warren.assink@us.af.mil'; 'Jeanne Benedetti'
Subject: Request for Concurrence

On behalf of the US Air Force Air Force Research Laboratory (AFRL) and their requirement under the National Environmental Policy Act and under Section 7 of the Endangered Species Act, and Fulcrum Sierra BioFuels, LLC, we are requesting your review and concurrence regarding an Environmental Assessment of two sites in Nevada, as described in the attached letter. The attached letter describes our request; and it provides an overview of the AFRL Program, a description of the proposed project, the location of the affected sites, and excerpts from the Draft Environmental Assessment that has been prepared for this action.

The Nevada Division of Wildlife had previously commented on an earlier design of a similar biofuel operation at the same site as the Biorefinery, as noted and described in the letter.

We look forward to your review and concurrence in response to this request.
Please contact me or the officials at AFRL, who are identified in the attached letter, if you require additional information.
Regards,
Bruce Macdonald

Appendix E

National Historic Preservation Act Section 106 Consultation Letters



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-1

10 FEB 2014

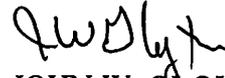
MEMORANDUM FOR ALVIN MOYLE, TRIBAL CHAIR
ROCHANNE DOWNS, NAGPRA COORDINATOR
FALLON PAIUTE-SHOSHONE BUSINESS COUNCIL
565 RIO VISTA DRIVE
FALLON NV 89406

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Fallon Paiute-Shoshone Tribes in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. I have attached a Program Introduction (Attachment 2) and site maps (Attachment 3) to assist in explaining the proposed effort and its rationale and expected impacts. At this time, we have no indication of previously documented historic properties of any kind being present in the APE.
3. Because the information we seek is technical in nature, I propose that members of our staffs handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. Mr. James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, is the Government Project Manager. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me at (937) 255-4726 if you have any questions or if your staff runs into issues that they cannot resolve or which warrant our personal involvement. Thank you for your assistance.



JOHN W. GLOYSTEIN, Colonel, USAF
Acting Director
Materials and Manufacturing Directorate

3 Attachments:

1. Nevada SPHO Application
2. Program Introduction
3. Proposed Site Maps

cc:

Ms. R. Palmer, NV Div of Conservation and Natural Resources

ATTACHMENT 1**NEVADA STATE HISTORIC PRESERVATION OFFICE
Recommended Coversheet for Section 106 Review**

SHPO USE ONLY			
Received Date	__/__/__	Log In Date	__/__/__
Response Date	__/__/__	Log Out Date	__/__/__
Sent Date	__/__/__		

If you find this document helpful in preparing a submission document, please include this with your submission. Please type. Due to limited resources and the requirements of federal regulation, we are unable to accept this application electronically.

I. GENERAL INFORMATION

THIS IS A NEW SUBMITTAL

THIS IS MORE INFORMATION RELATING TO UT# Click here to enter text.

- a. Project Name: *Fulcrum Sierra BioFuels, LLC - Advanced Drop-in Biofuel Production Project (ADBPP)*
 b. Project Address and APN (if available):

The ADBPP is comprised of two potential APE sites:

- 1. Feedstock Processing Facility APE: Lockwood, NV
Adjacent to Lockwood Regional Landfill, 2401 Canyon Way, Sparks, NV*
- 2. Biorefinery APE: Tahoe-Reno Industrial Center, McCarran, NV
3600 Peru Drive, McCarran, NV*

c. County: Storey

d. Federal Agency, Contact Name and Mailing Address (If you do not know the federal agency involved in your project please contact the party requiring you to apply for Section 106 review, not the SHPO, for this information).

*Air Force Research Laboratory's Defense Production Act Program Office
(AFRL/RXM)
2977 HOBSON WAY, RM 215,
WRIGHT-PATTERSON AFB, OH 45433-7734*

e. State Agency (if applicable), Contact Name and Mailing Address:

National and Nevada Registers of Historic Places.

f. Consultant or Applicant Contact Information (if applicable) including mailing address.

AECOM Technical Services, Inc.

1601 Prospect Parkway, Fort Collins, CO 80525

Summit Envirosolutions
6774 S. McCarran Blvd, Suite 101, Reno NV 89509

g. Exact project location map should be submitted. Please see our website for further mapping information: nvshpo.org/review-compliance/guidelines.html.

1. *Feedstock Processing Facility APE*
 1. 7.5' USGS Quad Map Name: *Derby Dam*
 2. Township: 19N, Range: 22E, Section: 22

2. *Biorefinery APE:*
 1. 7.5' USGS Quad Map Name: *Chalk Hills*
 2. Township: 19N, Range: 22E, Section: 11

II. PROJECT WORK DESCRIPTION AND AREA OF POTENTIAL EFFECTS (APE)

Note: Every project has an APE.

- a. Provide a detailed written description of the project (plans, specifications, Environmental Impact Statements (EIS), Environmental Assessments (EA), etc. can be included with the written description): *See Attachment 2*
- b. Provide a localized map indicating the location of the project; road names must be included and legible.
- c. On the above-mentioned map, identify the APE.
- d. Provide a written description of the APE (physical, visual, auditory, and atmospheric), the steps taken to identify the APE, and the justification for the boundaries chosen. Please consider the height of the proposed undertaking when determining this area.

The following table summarizes the potential effects on the environment the Feedstock Processing Facility and Biorefinery may have located at the two potential APE sites, as analyzed and summarized in the project's draft EA.

Summary of Anticipated Facility Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Land Use and Special Management Areas	No effect	Anticipated land use and landownership would remain unchanged. No special management areas within the vicinity of the facilities.	3.2
Transportation Corridors, Infrastructure, and Utilities	Minimal effect	Minimal increases in vehicle trips on existing roads, railways, infrastructure, and utilities designed and upgraded to accommodate large industrial uses.	3.3, 3.4
Surface Water	No effect	No potential for effects to surface water. Storm water to evaporation pond, irrigation, etc.	3.5
Floodplains	No effect	The sites are not located in a flood zone or floodplain.	3.5
Wetlands	No effect	There are no federally designated wetlands located on or near both sites.	3.5

Summary of Anticipated Facility Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Groundwater	Negligible effect, permit required	The potential to contaminate groundwater would be negligible. Storm water and groundwater discharge permits required. No direct discharge to groundwater; permit is for retention basin.	3.5
Geology and Soils	No effect	No potential for impact to geology and soils at the sites.	3.7
Vegetation	Minimal effect	Removal of 32.4 acres of sagebrush vegetation and understory grasses in partially disturbed areas planned for industrial development.	3.8
Wildlife and Fisheries	Minimal effect, protective measures	Removal of 32.4 acres of wildlife habitat and displacement of wildlife in partially disturbed areas planned for industrial development. Protective measures that limit habitat removal during migratory periods would be implemented.	3.9
Special Status Species	Minimal effect, protective measures	No impacts to federally listed endangered species. No impacts to state listed or sensitive plant species. Minimal effects to state listed mammals and bird species from removal of 32.4 acres of habitat in partially disturbed areas planned for industrial development. Protective measures that limit habitat removal during migratory periods will be implemented.	3.10
Air Quality	Minimal effect, permit required	Impacts of emissions would not cause or contribute to an exceedence of an ambient air quality standard. Air quality "Operating Permit To Construct" (Permit No. AP 2869-3306) was issued July 1, 2013.	3.11
Cultural Resources	No adverse effect	Biorefinery: November 2008 Class I files search survey done and SHPO consultation completed on February 14, 2011. Feedstock Processing Facility December 13, 2013 Class I files search survey done. No known cultural resources on site. If undiscovered cultural resources are found work will cease pending consultation with Tribes and SHPO.	3.12
Socioeconomics and Environmental Justice	Minimal effect	No adverse effects are anticipated to existing communities or populations. The addition of up to 53 fulltime jobs would benefit nearby communities.	3.13
Visual Resources	Minimal effect	Introduction of visual elements would be similar to other industrial developments at the TRI Center and in adjacent industrial areas.	3.14
Noise	Minimal effect	Introduction of noise would be similar to other industrial developments at the TRI Center and adjacent industrial areas.	3.15

Summary of Anticipated Facility Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Public Health and Safety	No effect	While a potential for spills and fire would exist at the facilities because of the nature of the operations, no effects from routine operations or accidents are anticipated from the facilities due to its remoteness from population centers and emergency preparedness measures.	3.16

III. GROUND DISTURBING ACTIVITY (INCLUDING EXCAVATION, GRADING, TREE REMOVALS, UTILITY INSTALLATION, CONSTRUCTION, ETC.)

DOES THIS PROJECT INVOLVE GROUND-DISTURBING ACTIVITY? YES NO (If no, proceed to section IV.)

b. Description of width, length and depth of proposed ground disturbing activity (please include all associated disturbances (access roads, laydown areas, etc):

1. *Feedstock Processing Facility APE:*

Approximately 14.4 acres to be graded, excavated, cleared, and used for construction of the facility. A water line will installed to include approximately 13,000 linear feet of 3" high density polyethylene pipe (see Attachment 3)

2. *Biorefinery APE:*

Approximately 19.4 acres to be cleared, graded, excavated and used for construction of the facility. All utilities are existing in the ROW in Peru Drive adjacent to the property.

c. Previous land use and disturbances:

1. *Feedstock Processing Facility APE: None*

2. *Biorefinery APE: 16.77 acres have been cleared, excavated and graded*

d. Current land use and conditions: *Cleared land, no current use*

e. Does the landowner know of any archaeological resources found on the property?

Please describe: *No. See Section IV below and Attachment 5*

IV. IDENTIFICATION OF HISTORIC PROPERTIES

a. List and date all resources (buildings, structures, objects, archaeological sites) 50 years of age or older located in the APE. If the resource is located within a National Register eligible, listed or local district it is only necessary to identify the district:

None for either APE site.

- b. Describe the steps taken to identify whether or not any resources eligible for the National Register of Historic Places exist in the APE and include the level of effort made to carry out such steps:

1. *A file and records search for the Biorefinery site was conducted and reported in the attached letter from Summit Envirosolutions, November 20, 2008.*
2. *A file and records search for the Feedstock Processing Facility site was conducted and reported in the attached letter from Summit Envirosolutions, December 17, 2013.*

Based on the information contained in "b", please choose one:

- Historic Properties Present in the APE
- No Historic Properties Present in the APE

- d. Describe the condition, previous disturbance to, and history of any historic properties located in the APE: *No known historic properties for either APE site.*

V. PHOTOGRAPHS

Note: All photographs should be keyed to a map.

- a. Provide photographs of the project area itself.
- b. Provide photographs of all resources 50 years of age or older located in the APE. Digital images or clear photocopies are acceptable.

VI. DETERMINATION OF EFFECT

Based on the above information, please choose one.

- No historic properties affected based on [36 CFR § 800.4(d)(1)], please provide the justification for this determination.
- See Attachment 4 – Summit Envirosolutions' Class 1 Search Reports*
See Attachment 5 – Prior SHPO Consultation Letters regarding each APE site
- No Adverse Effect [36 CFR § 800.5(b)] on historic properties, explain why the criteria of adverse effect, 36 CFR Part 800.5(a)(1), were found not applicable.
- See Attachment 4 – Summit Envirosolutions' Class 1 Search Reports*
See Attachment 5 – Prior SHPO Consultation Letters regarding each APE site
- Adverse Effect [36 CFR § 800.5(d)(2)] on historic properties, explain why the criteria of adverse effect, [36 CFR Part 800.5(a)(1)], were found applicable.

Please print and mail completed form and any additional information to:

*Nevada State Historic Preservation Office
901 S. Stewart Street, Suite 5004
Carson City, Nevada 89701-5248*

ATTACHMENT 2

Program Introduction

Purpose:

The Advanced Drop-In Biofuel Production Project (ADBPP) is a Department of Defense (DoD)-led multi-agency effort to develop a viable commercial-scale Integrated Biofuel Production Enterprise (IBPE) that has a capacity of to produce at least 10 million gallons per year of neat biofuel. The effort intends to support the establishment of a domestic commercial-scale manufacturing facility that produces aviation and marine diesel biofuels from sustainable biomass feedstock. The DoD has indicated intention to purchase drop-in replacement biofuels that meet approved product specifications, meet the provisions of the Energy Independence and Security Act (EISA) Section 526, and can utilize the existing infrastructure, and are deliverable to the DoD fuel supply system fully blended with conventional petroleum product counterparts.

Fulcrum Sierra BioFuels, LLC, formerly Fulcrum Brighton BioFuels, LLC as awardee under Phase 1 of the ADBPP, (Fulcrum), intends to construct, own and operate a municipal solid waste (MSW) feedstock IBPE, comprised of a Feedstock Processing Facility and a Biorefinery. The project Area of Potential Effect (APE) is comprised of two sites. Located on 19.4 acres approximately 20 miles east of Reno, Nevada, the Biorefinery APE will use steam-reforming gasification, Fischer-Tropsch (FT) and fuels upgrading technologies to produce approximately 10.5 million gallons annually of renewable neat FT synthesized paraffinic kerosene (SPK) fuel from approximately 200,000 tons of MSW feedstock. The renewable SPK fuel shipped and then blended into a final fuel blend product to meet ASTM and/or military specifications for Jet A, JP-5, JP-8 or F-76 fuels. The Biorefinery is expected to be permitted as a Class II minor source of air emissions.

The Feedstock Processing Facility APE, located on approximately 14.4 acres in Lockwood, Storey County, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery, will include a MSW processing system engineered to incorporate a unique combination of shredding steps that remove the smaller fractions of the MSW stream. The shredded material is separated by density using an air classification system. The air classification process provides the separation needed to create Feedstock that is relatively free of moisture and includes mixed paper, textiles, wood and some mixed plastics. The heavy fraction materials include glass, inert materials, fines and very wet items. This unique combination of targeted shredding combined with bulk density separation is the fundamental driver behind the Project's ability to create a consistent Feedstock suitable for the production of SPK fuel. The processed Feedstock is baled for storage and/or transport to the Biorefinery. The Feedstock Processing Facility is expected to be permitted as a Class II minor source of air emissions.

The location for the proposed Biorefinery was subject to a previous Department of Energy Environmental Assessment (EA-1848) in which a Finding of No Significant Impact determination was finalized on June 2011. This proposed project differs from the project subject to assessment under EA-1848 in that the project's planned end product, the proposed technology, the location of the feedstock processing, and the parcel size have changed. The previous EA investigated ethanol production using alcohol synthesis technology instead of SPK fuel production using FT and fuels upgrading technologies. The feedstock processing has been relocated from the Biorefinery to be closer a 14.4 acre parcel, adjacent to the

Lockwood Regional Landfill. The footprint of the Biorefinery has increased the parcel from 16.77 acres to 19.4 acres. However, the physical characteristics of the Biorefinery site have not changed from those previously reviewed.

Currently the contractor is validating their proposed technical, economic and regulatory viability assumptions leading to a potential follow-on contract that would execute facility construction and initiate production. The DoD awarded this initial phase to multiple contractors documenting numerous technical and logistical alternatives that will compete for the follow-on contract.

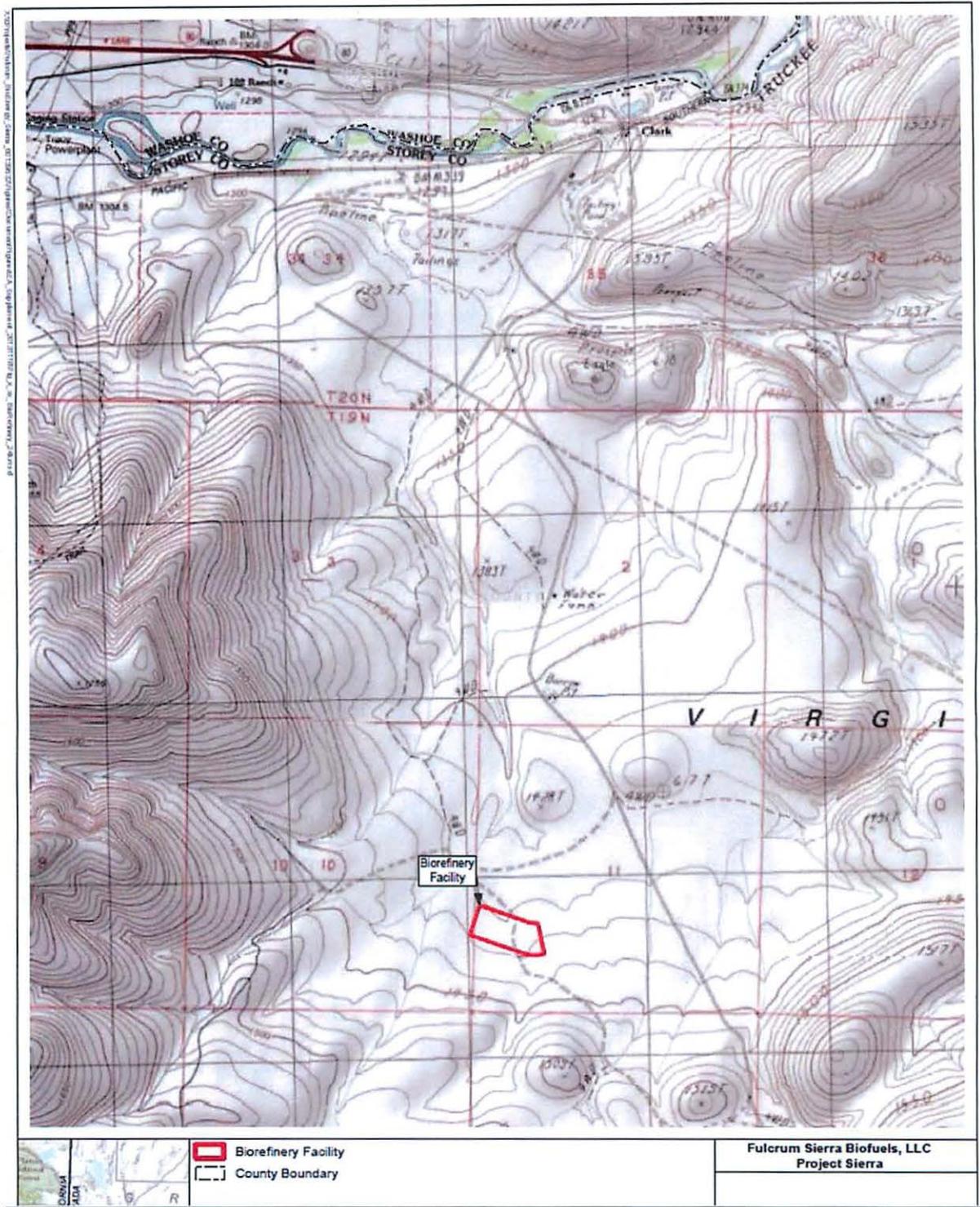
Expected or known utility infrastructure upgrades required:

- a. Feedstock Processing Facility (see **Attachment 3**):
 - i. Install interconnection to 24.9 kV overhead electrical distribution power line existing across Mustang Road in southwest corner of the property.
 - ii. Install approximately 13,000 lateral feet of 3" HDPE potable water line in Storey County right of way along Canyon Way to private road of Lockwood Regional Landfill
 - iii. Onsite Sewage Disposal System
- b. Biorefinery (see **Attachment 3**)
 - i. Connect to Tahoe Reno Industrial Center Utilities (water, and sewer) currently existing in right of way of Peru Drive
 - ii. Install interconnection to natural gas distribution system currently existing in right of way of Peru Drive
 - iii. Install interconnection to existing 24.9 kV overhead electrical distribution power line currently existing in right of way of Peru Drive

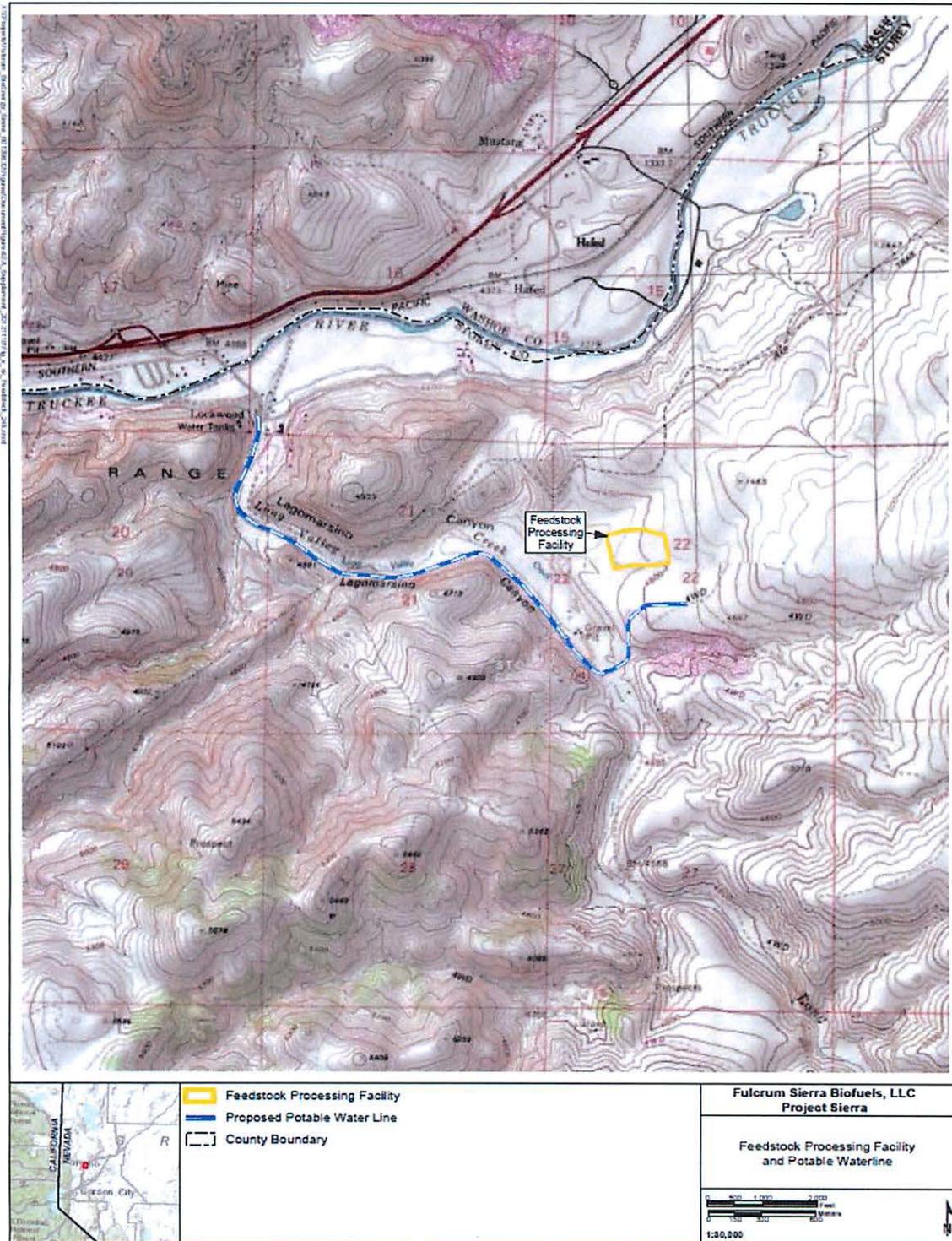
Section 106 consulting planned with the following parties:

- 1) Pyramid Lake Paiute Tribe of the Pyramid Lake
- 2) Paiute-Shoshone Tribe of the Fallon Reservation and Colony
- 3) Walker-River Paiute Tribe of the Walker River Reservation
- 4) Washoe Tribe (Nevada and California)
- 5) Fort McDermitt Paiute and Shoshone Tribes
- 6) Reno-Sparks Indian Colony
- 7) Shoshone-Paiute Tribes of the Duck Valley Reservation
- 8) Yerington Paiute Tribe of the Yerington Colony & Campbell Ranch

Topographic Depiction of Biorefinery



Topographic Depiction of Feedstock Processing Facility



Photos





DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-13

10 FEB 2014

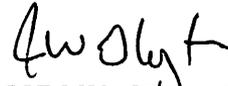
MEMORANDUM FOR KAREN CRUTCHER, TRIBAL CHAIR
FT. MCDERMITT PAIUTE-SHOSHONE TRIBE
P.O. BOX 4557
MCDERMITT NV 89421

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Ft. McDermitt Paiute-Shoshone Tribe in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. I have attached a Program Introduction (Attachment 2) and site maps (Attachment 3) to assist in explaining the proposed effort and its rationale and expected impacts. At this time, we have no indication of previously documented historic properties of any kind being present in the APE.
3. Because the information we seek is technical in nature, I propose that members of our staffs handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. Mr. James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, is the Government Project Manager. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me at (937) 255-4726 if you have any questions or if your staff runs into issues that they cannot resolve or which warrant our personal involvement. Thank you for your assistance.



JOHN W. GLOYSTEIN, Colonel, USAF
Acting Director
Materials and Manufacturing Directorate

3 Attachments:

1. Nevada SPHO Application
2. Program Introduction
3. Proposed Site Maps

cc:

Ms. R. Palmer, NV Div of Conservation and Natural Resources



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-15

0 FEB 2014

MEMORANDUM FOR MALVIN WRIGHT, JR., TRIBAL CHAIR
PYRAMID LAKE PAIUTE TRIBE
P.O. BOX 256
NIXON NV 89424

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Pyramid Lake Paiute Tribe in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.
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WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-17

10 FEB 2014

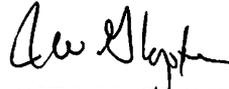
MEMORANDUM FOR ARLAN MELENDEZ, TRIBAL CHAIR
MICHELLE EBAN, CULT. RESOURCES COORD.
RENO-SPARKS INDIAN COMMUNITY
98 COLONY ROAD
RENO NV 89502

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Reno-Sparks Indian Community in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. I have attached a Program Introduction (Attachment 2) and site maps (Attachment 3) to assist in explaining the proposed effort and its rationale and expected impacts. At this time, we have no indication of previously documented historic properties of any kind being present in the APE.
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DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-19

10 FEB 2014

MEMORANDUM FOR WAREN BARLESE, CHAIRMAN
RON JOHNNY, ENVIRONMENTAL COORDINATOR
SUMMIT LAKE PAIUTE TRIBE
1708 H STREET
SPARKS NV 89431

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Summit Lake Paiute Tribe in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.

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DEPARTMENT OF THE AIR FORCE
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WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-21

10 FEB 2014

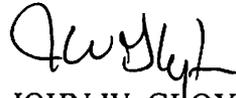
MEMORANDUM FOR W. WALKER, CHAIRMAN
WAHONE TRIBE (NV AND CAL) CARSON COLONY,
DRESSELERVILLE COLONY, WOODFORDS COMMUNITY,
STEWART COMMUNITY AND WASHOE RANCHES
919 HIGHWAY 395 SOUTH
GARDNERVILLE NV 89410

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Wahone Tribe, et al., in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.
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Materials and Manufacturing Directorate

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Ms. R. Palmer, NV Div of Conservation and Natural Resources



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-23

10 FEB 2014

MEMORANDUM FOR GENIA WILLIAMS, CHAIRMAN
WALKER RIVER PAIUTE TRIBE
P.O. BOX 220
SCHURZ NV 89427

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Walker River Paiute Tribe in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.

2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. I have attached a Program Introduction (Attachment 2) and site maps (Attachment 3) to assist in explaining the proposed effort and its rationale and expected impacts. At this time, we have no indication of previously documented historic properties of any kind being present in the APE.

3. Because the information we seek is technical in nature, I propose that members of our staffs handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. Mr. James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, is the Government Project Manager. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me at (937) 255-4726 if you have any questions or if your staff runs into issues that they cannot resolve or which warrant our personal involvement. Thank you for your assistance.



JOHN W. GLOYSTEIN, Colonel, USAF
Acting Director
Materials and Manufacturing Directorate

3 Attachments:

1. Nevada SPHO Application
2. Program Introduction
3. Proposed Site Maps

cc:

Ms. R. Palmer, NV Div of Conservation and Natural Resources

MEMO FOR THE RECORD

From: Ms. Misty Benner
Cultural Director
Walker River Paiute Tribe of the Walker River Reservation in Nevada
via voicemail (775-842-6526)

Date: 6 March 2014 @ 1619 EST

RE: AFRL's letter, dated 10 February 2014, soliciting tribal cultural consultation on the proposed Advanced Drop-in Biofuel Production Project (ADBPP) sites in the Tahoe-Reno Industrial Park, Storey County NV.

Ms. Benner stated that the proposed location is outside of the tribe's traditional area and therefore further tribal consultation is not required. She recommended contacting the Reno-Sparks Paiute tribe's cultural department concerning the subject location.

AFRL reviewed its tribal consultation letter records and verified that one had been submitted to that tribe. Action closed.

Warren Assink
AFRL/RXSC



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-26

10 FEB 2014

MEMORANDUM FOR E. EMM, CHAIRMAN
YERINGTON PAIUTE TRIBE OF THE YERINGTON COLONY
AND CAMPBELL RANCH
171 CAMPBELL LANE
YERINGTON NV 89447

FROM: AFRL/RX
2977 Hobson Way, Rm 400
Wright-Patterson AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this letter is to initiate government-to-government consultation and to request assistance from the Yerington Paiute Tribe of the Yerington Colony and Campbell Ranch in determining if any significance is involved at the proposed site. Our proposed project Area of Potential Effect (APE) is described in the attached application (Attachment 1) developed by Fulcrum.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. I have attached a Program Introduction (Attachment 2) and site maps (Attachment 3) to assist in explaining the proposed effort and its rationale and expected impacts. At this time, we have no indication of previously documented historic properties of any kind being present in the APE.
3. Because the information we seek is technical in nature, I propose that members of our staffs handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. Mr. James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, is the Government Project Manager. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me at (937) 255-4726 if you have any questions or if your staff runs into issues that they cannot resolve or which warrant our personal involvement. Thank you for your assistance.



JOHN W. GLOYSTEIN, Colonel, USAF
Acting Director
Materials and Manufacturing Directorate

3 Attachments:

1. Nevada SPHO Application
2. Program Introduction
3. Proposed Site Maps

cc:

Ms. R. Palmer, NV Div of Conservation and Natural Resources



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-28

JUN 06 2014

MEMORANDUM FOR: MALVIN WRIGHT, JR., TRIBAL CHAIR
PYRAMID LAKE PAIUTE TRIBE
P.O. BOX 256
NIXON NV 89424

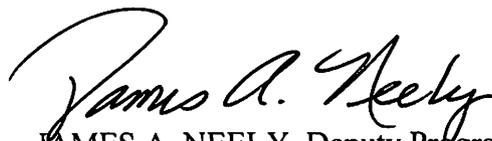
FROM: AFRL/RXME, DEFENSE PRODUCTION ACT TITLE III PROGRAM
2977 HOBSON WAY RM215
WRIGHT-PATTERSON AFB OH 45433-7734

SUBJECT: National Historical Preservation Act (NHPA) Section 106 Consultation

1. In reference to 10 Feb 2014 memo (National Historical Preservation Act (NHPA) Section 106 Consultation), I am forwarding this follow-up correspondence on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this follow-up letter is to make sure you received the government-to-government consultation requesting assistance from the Pyramid Lake Paiute Tribe in determining if any significance is involved at the proposed site. Details of our proposed project Area of Potential Effect (APE) were described in the initial correspondence.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. At this time the Air Force Research Laboratory (AFRL) has no indication of previously documented historic properties of any kind being present in the APE.
3. Because the information we seek is technical in nature, I propose that members of your staff handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. I, James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, am the Government Project Manager. Request your response by 20 June 2014. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me if you have any questions or if your staff runs into issues that they cannot resolve or which warrant our personal involvement. Thank you for your assistance.

Sincerely,

A handwritten signature in black ink that reads "James A. Neely". The signature is written in a cursive style with a large, sweeping initial "J".

JAMES A. NEELY, Deputy Program Manager
Defense Production Act Title III Program
Materials and Manufacturing Directorate



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-30

JUN 06 2014

MEMORANDUM FOR: ALVIN MOYLE, TRIBAL CHAIR
ROCHANNE DOWNS, NAGPRA COORDINATOR
FALLON PAIUTE-SHOSHONE BUSINESS COUNCIL
565 RIO VISTA DRIVE
FALLON NV 89406

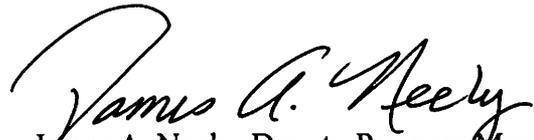
FROM: AFRL/RXME, DEFENSE PRODUCTION ACT TITLE III PROGRAMS
2977 HOBSON WAY, RM 215
WRIGHT-PATTERSON AFB OH 45433-7734

SUBJECT: National Historical Preservation Act (NHPA) Section 106 Consultation

1. In reference to 10 Feb 14 memo, National Historical Preservation Act (NHPA) Section 106 Consultation, I am forwarding this follow-up correspondence on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this follow-up letter is to make sure you received the government-to-government consultation requesting assistance from the Fallon Paiute-Shoshone Tribes in determining if any significance is involved at the proposed site. Details of our proposed project Area of Potential Effect (APE) were described in the initial correspondence.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. At this time the Air Force Research Laboratory (AFRL) has no indication of previously documented historic properties of any kind being present in the APE.
3. Because the information we seek is technical in nature, I propose that members of your staff handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. I, James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, am the Government Project Manager. Request your response by 20 June 2014. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me if you have any questions or if your staff runs into issues that they cannot resolve. Thank you for your assistance.

Sincerely,

A handwritten signature in black ink that reads "James A. Neely". The signature is written in a cursive style with a large, looping initial "J".

James A. Neely, Deputy Program Manager
Defense Production Act Title III Programs
Materials and Manufacturing Directorate



July 29, 2014

Warren Assink, AFRL/RXSC
Department of the Air Force
Wright Patterson Air Force Base, OH 45433

RE: Feedstock Processing Facility

Mr. Warren Assink,

The Fallon Paiute Shoshone Tribe's NAGPRA Coordinator has reviewed the **AFRL's** request for consultation regarding; Feedstock Processing Facility adjacent to the Lockwood Regional Landfill.

After review of the site map the Fallon Paiute Shoshone Tribe does not have an immediate concern with the project as proposed. In the event of an inadvertent discovery, we request that the Fallon Paiute Shoshone Tribe or Tribe in the closest proximity be contacted immediately, and that work cease until Tribal clearance is given.

FPST NAGPRA Committee supports other Tribe's that may identify any properties at this location that are of religious or cultural significance and in the event that another Tribal organization is reached, we request written notification of such action.

The NAGPRA Committee acknowledges and appreciates the AFRL's notification of potential traditional cultural properties and I apologize for the delayed response. Should there be any questions or a need for additional information you may contact Vinton Hawley, NAGPRA/Cultural Coordinator at (775) 423-8065.

Sincerely,

Vinton T. Hawley, for
Len George, FPST Tribal Chairman
Fallon Paiute Shoshone Tribe

Cc: NAGPRA Committee



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-33

JUN 06 2014

MEMORANDUM FOR: KAREN CRUTCHER, TRIBAL CHAIR
FT. MCDERMITT PAIUTE-SHOSHONE TRIBE
P.O. BOX 4557
MCDERMITT NV 89421

FROM: AFRL/RXME, DEFENSE PRODUCTION ACT TITLE III PROGRAM
2977 HOBSON WAY RM215
WRIGHT-PATTERSON AFB OH 45433-7734

SUBJECT: National Historical Preservation Act (NHPA) Section 106 Consultation

1. In reference to 10 Feb 2014 memo (National Historical Preservation Act (NHPA) Section 106 Consultation), I am forwarding this follow-up correspondence on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this follow-up letter is to make sure you received the government-to-government consultation requesting assistance from the Ft. McDermitt Paiute-Shoshone Tribe in determining if any significance is involved at the proposed site. Details of our proposed project Area of Potential Effect (APE) were described in the initial correspondence.

2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. At this time the Air Force Research Laboratory (AFRL) has no indication of previously documented historic properties of any kind being present in the APE.

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4. Please feel free to call me if you have any questions or if your staff runs into issues that they cannot resolve. Thank you for your assistance.

Sincerely,

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JAMES A. NEELY, Deputy Program Manager
Defense Production Act Title III Program
Materials and Manufacturing Directorate



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-35

JUN 06 2014

MEMORANDUM FOR: ARLAN MELENDEZ, TRIBAL CHAIR
MICHELLE EBAN, CULT. RESOURCES COORD.
RENO-SPARKS INDIAN COMMUNITY
98 COLONY ROAD
RENO NV 89502

FROM: AFRL/RXME, DEFENSE PRODUCTION ACT TITLE III PROGRAM
2977 HOBSON WAY B653 R215
WRIGHT-PATTERSON AFB OH 45433-7734

SUBJECT: National Historical Preservation Act (NHPA) Section 106 Consultation

1. In reference to 10 Feb 2014 letter (National Historical Preservation Act (NHPA) Section 106 Consultation), I am forwarding this follow-up correspondence on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this follow-up letter is to make sure you received the government-to-government consultation and to request assistance from the Reno-Sparks Indian Community in determining if any significance is involved at the proposed site. Details of our proposed project Area of Potential Effect (APE) were described in the initial correspondence.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. At this time the Air Force Research Laboratory (AFRL) has no indication of previously documented historic properties of any kind being present in the APE.
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JAMES A. NEELY, Deputy Program Manager
Defense Production Act Title III Program
Materials and Manufacturing Directorate



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

E-37

JUN 06 2014

MEMORANDUM FOR: WARREN BARLESE, CHAIRMAN
RON JOHNNY, ENVIRONMENTAL COORDINATOR
SUMMIT LAKE PAIUTE TRIBE
1708 H STREET
SPARKS NV 89431

FROM: AFRL/RXME, DEFENSE PRODUCTION ACT TITLE III PROGRAM
2977 HOBSON WAY RM 215
WRIGHT-PATTERSON AFB OH 45433-7734

SUBJECT: National Historical Preservation Act Section 106 Consultation

1. In reference to 10 Feb 14 memo, National Historical Preservation Act (NHPA) Section 106 Consultation, I am writing on behalf of the U.S. Air Force in connection with the proposed "Advanced Drop-in Biofuels Production Project" (ADBPP) that may be constructed in the Tahoe-Reno Industrial Center, Storey County, Nevada. Section 101(d)(6)(B) of the National Historical Preservation Act (NHPA) of 1966 and 36 CFR §800.2(c)(2)(ii) require Federal agencies to consult with any Indian tribe that attaches religious and cultural significance to historic properties that might be affected by an agency's actions. The purpose of this follow-up letter is to make sure you received the government-to-government consultation requesting assistance from the Summit Lake Paiute Tribe in determining if any significance is involved at the proposed site. Details of our proposed project Area of Potential Effect (APE) were described in the initial correspondence.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. At this time the Air Force Research Laboratory (AFRL) has no indication of previously documented historic properties of any kind being present in the APE.
3. Because the information we seek is technical in nature, I propose that members of your staff handle further consultation on this project. Mr. Warren Assink, AFRL/RXSC, warren.assink@us.af.mil, (937) 255-3480, is coordinating the AFRL Environmental Assessment to ensure that the tribe's comments and concerns are addressed. I, James Neely, AFRL/RXME, james.neely@us.af.mil, (937) 904-4374, am the Government Project Manager. Request your response by 20 June 2014. When this assessment is available for public comment, we will provide a copy for Tribal review and comments.

4. Please feel free to call me if you have any questions or if your staff runs into issues that they cannot resolve or which warrant our personal involvement. Thank you for your assistance.

Sincerely,

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JAMES A. NEELY, Deputy Program Manager
Defense Production Act Title III Program
Materials and Manufacturing Directorate

Appendix F

SHPO Consultation

LEO M. DROZDOFF, P.E.
Director
Department of Conservation and
National Resources

REBECCA L PALMER
State Historic Preservation Officer

BRIAN SANDOVAL
Governor
STATE OF NEVADA



Address Reply to:
901 S. Stewart St, Suite 5004
Carson City, NV 89701-5248
Phone: (775) 684-3448
Fax: (775) 684-3442

www.nvshpo.org

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

January 15, 2014

James A. Neely
AFRL/RXME
DPA Title III Project Manager
Materials and Manufacturing Directorate
2977 Hobson Way, RM 215
Wright-Patterson AFB, OH 45433-7734

RE: *Fulcrum Sierra BioFuels, LLC - Advanced Drop-In Biofuel Production Project, Storey County Nevada.*
Undertaking #2014-2999.

Dear Mr. Neely:

The Nevada State Historic Preservation Office (SHPO) has reviewed the subject undertaking in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

The SHPO concurs with the Department of the Air Force's (Air Force) determination of the area of potential effects (APE) for the above-mentioned undertaking.

The SHPO notes that the Air Force's identification efforts for historic properties in the established APE for this undertaking are adequate under NHPA.

The SHPO concurs with the Air Force's determination of No Historic Properties Affected.

The SHPO notes that consultation with the affected Native American representatives has been initiated. If this consultation results in the identification of properties of religious or cultural significance that could be affected by the undertaking, the Air Force must consult with this office concerning the National Register eligibility and possible effects of the undertaking. Regardless of the results of this consultation, the SHPO requests that the Air Force submit a summary statement after its completion.

Should you have any questions concerning this correspondence, please contact Jessica Axsom at (775)684-3445 or by e-mail at jaxsom@shpo.nv.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. Axsom', written over a printed name and title.

Jessica Axsom
Review and Compliance Archaeologist



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESEARCH LABORATORY
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

F-2

DEC 19 2013

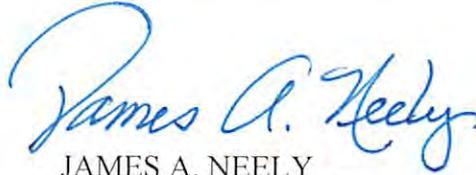
MEMORANDUM FOR MS. R. PALMER
NEVADA STATE HISTORICAL PRESERVATION OFFICER
NV DIV OF CONSERVATION AND NATURAL RESOURCES
901 S. STEWART STREET, SUITE 5004
CARSON CITY NV 89701-4285

FROM: AFRL/RXME (J. Neely)
2977 HOBSON WAY, RM 215
WRIGHT-PATTERSON AFB, OH 45433-7734

SUBJECT: National Historical Preservation Act (NHPA) Section 106 Consultation

1. The Air Force Research Laboratory (AFRL) may be partnering with a commercial company, Fulcrum Sierra BioFuels, LLC (formerly Fulcrum Brighton BioFuels, LLC as an awardee under Phase 1 of the Advanced Drop-In Biofuel Production Project (ADBPP) (Fulcrum), to develop an ADBPP facility in the Tahoe-Reno Industrial Center, Storey County, Nevada. In anticipation of that potential partnering, AFRL is initiating contact with your office following provisions of 36CFR§800.3, and we particularly are soliciting your information and advice regarding our proposed project Area of Potential Effect (APE) described in the attached application (Attachment 1) developed by Fulcrum. We are concurrently seeking information from the federally-recognized tribes listed in the attached application.
2. The potential ADBPP facility will be comprised of a Feedstock Processing Facility and a Biorefinery on two distinct sites zoned "I-2 Heavy Industrial" located in Storey County, Nevada. The APE for the Feedstock Processing Facility will be located on approximately 14.4 acres near the community of Lockwood, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery. The APE for the Biorefinery will be constructed on approximately 19.4 acres located in the Tahoe-Reno Industrial Center in McCarran, approximately 20 miles east of Reno, Nevada. AFRL has attached a Program Introduction (Attachment 2) and site maps (Attachment 3) to assist in explaining the proposed effort and its rationale and expected impacts.
3. Fulcrum's environmental contractor, AECOM Technical Services, Inc. (AECOM), has conducted a Class 1 literature and record search for previously recorded cultural resources on both proposed APE sites (Attachment 4). Based on the findings of this research and including previous consultations with your office associated with both proposed APE sites (Attachment 5), little or no impacts are expected when executing this proposed action. Currently neither site is developed, but both contain disturbed landscapes. AFRL plans to formally solicit Native American tribe consultation from those identified in the Program Information attachment. Based on these findings combined with the disturbed landscape on both APE sites, AFRL proposes that no historic properties would be affected by the proposed project, and we seek your concurrence on that reference 36 CFR 800.4(d)(1).

4. The AFRL and Fulcrum teams look forward to any Nevada State Historical Preservation Office comments about the potential location. AFRL's Title III action officer on this effort is Mr. Warren Assink, (937) 255-3480, warren.assink@us.af.mil. You can also reach me at (937) 904-4374, james.neely@us.af.mil.



JAMES A. NEELY
DPA Title III Project Manager
Materials and Manufacturing Directorate

Attachments:

1. Nevada SPHO application
2. Program introduction
3. Proposed site maps
4. Class 1 reports
5. Previous SHPO consultation letters

ATTACHMENT 1

**NEVADA STATE HISTORIC PRESERVATION OFFICE
Coversheet and Application for Section 106 Review**

**NEVADA STATE HISTORIC PRESERVATION OFFICE
Recommended Coversheet for Section 106 Review**

SHPO USE ONLY			
Received Date	___/___/___	Log In Date	___/___/___
Response Date	___/___/___	Log Out Date	___/___/___
Sent Date	___/___/___		

If you find this document helpful in preparing a submission document, please include this with your submission. Please type. Due to limited resources and the requirements of federal regulation, we are unable to accept this application electronically.

I. GENERAL INFORMATION

THIS IS A NEW SUBMITTAL

THIS IS MORE INFORMATION RELATING TO UT# Click here to enter text.

- a. Project Name: *Fulcrum Sierra BioFuels, LLC - Advanced Drop-in Biofuel Production Project (ADBPP)*
 b. Project Address and APN (if available):

The ADBPP is comprised of two potential APE sites:

1. *Feedstock Processing Facility APE: Lockwood, NV
Adjacent to Lockwood Regional Landfill, 2401 Canyon Way, Sparks, NV*
2. *Biorefinery APE: Tahoe-Reno Industrial Center, McCarran, NV
3600 Peru Drive, McCarran, NV*

c. County: Storey

d. Federal Agency, Contact Name and Mailing Address (If you do not know the federal agency involved in your project please contact the party requiring you to apply for Section 106 review, not the SHPO, for this information.).

*Air Force Research Laboratory's Defense Production Act Program Office (AFRL/RXM)
2977 HOBSON WAY, RM 215,
WRIGHT-PATTERSON AFB, OH 45433-7734*

e. State Agency (if applicable), Contact Name and Mailing Address:

National and Nevada Registers of Historic Places.

f. Consultant or Applicant Contact Information (if applicable) including mailing address.

*AECOM Technical Services, Inc.
1601 Prospect Parkway, Fort Collins, CO 80525*

*Summit Envirosolutions
6774 S. McCarran Blvd, Suite 101, Reno NV 89509*

g. Exact project location map should be submitted. Please see our website for further mapping information: nvshpo.org/review-compliance/guidelines.html.

1. *Feedstock Processing Facility APE*
 1. 7.5' USGS Quad Map Name: *Derby Dam*
 2. Township: 19N, Range: 22E, Section: 22

2. *Biorefinery APE:*
 1. 7.5' USGS Quad Map Name: *Chalk Hills*
 2. Township: 19N, Range: 22E, Section: 11

II. PROJECT WORK DESCRIPTION AND AREA OF POTENTIAL EFFECTS (APE)

Note: Every project has an APE.

a. Provide a detailed written description of the project (plans, specifications, Environmental Impact Statements (EIS), Environmental Assessments (EA), etc. can be included with the written description): *See Attachment 2*

b. Provide a localized map indicating the location of the project; road names must be included and legible.

c. On the above-mentioned map, identify the APE.

d. Provide a written description of the APE (physical, visual, auditory, and atmospheric), the steps taken to identify the APE, and the justification for the boundaries chosen. Please consider the height of the proposed undertaking when determining this area.

The following table summarizes the potential effects on the environment the Feedstock Processing Facility and Biorefinery may have located at the two potential APE sites, as analyzed and summarized in the draft EA.

Summary of Anticipated Facility Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Land Use and Special Management Areas	No effect	Anticipated land use and landownership would remain unchanged. No special management areas within the vicinity of the facilities.	3.2
Transportation Corridors, Infrastructure, and Utilities	Minimal effect	Minimal increases in vehicle trips on existing roads, railways, infrastructure, and utilities designed and upgraded to accommodate large industrial uses.	3.3, 3.4
Surface Water	No effect	No potential for effects to surface water. Storm water to evaporation pond, irrigation, etc.	3.5
Floodplains	No effect	The sites are not located in a flood zone or floodplain.	3.5
Wetlands	No effect	There are no federally designated wetlands located on or near both sites.	3.5

Summary of Anticipated Facility Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Groundwater	Negligible effect, permit required	The potential to contaminate groundwater would be negligible. Storm water and groundwater discharge permits required. No direct discharge to groundwater; permit is for retention basin.	3.5
Geology and Soils	No effect	No potential for impact to geology and soils at the sites.	3.7
Vegetation	Minimal effect	Removal of 32.4 acres of sagebrush vegetation and understory grasses in partially disturbed areas planned for industrial development.	3.8
Wildlife and Fisheries	Minimal effect, protective measures	Removal of 32.4 acres of wildlife habitat and displacement of wildlife in partially disturbed areas planned for industrial development. Protective measures that limit habitat removal during migratory periods would be implemented.	3.9
Special Status Species	Minimal effect, protective measures	No impacts to federally listed endangered species. No impacts to state listed or sensitive plant species. Minimal effects to state listed mammals and bird species from removal of 32.4 acres of habitat in partially disturbed areas planned for industrial development. Protective measures that limit habitat removal during migratory periods will be implemented.	3.10
Air Quality	Minimal effect, permit required	Impacts of emissions would not cause or contribute to an exceedence of an ambient air quality standard. Air quality "Operating Permit To Construct" (Permit No. AP 2869-3306) was issued July 1, 2013.	3.11
Cultural Resources	No adverse effect	Biorefinery: November 2008 Class I files search survey done and SHPO consultation completed on February 14, 2011. Feedstock Processing Facility December 13, 2013 Class I files search survey done. No known cultural resources on site. If undiscovered cultural resources are found work will cease pending consultation with Tribes and SHPO.	3.12
Socioeconomics and Environmental Justice	Minimal effect	No adverse effects are anticipated to existing communities or populations. The addition of up to 53 fulltime jobs would benefit nearby communities.	3.13
Visual Resources	Minimal effect	Introduction of visual elements would be similar to other industrial developments at the TRI Center and in adjacent industrial areas.	3.14
Noise	Minimal effect	Introduction of noise would be similar to other industrial developments at the TRI Center and adjacent industrial areas.	3.15

Summary of Anticipated Facility Effects on the Environment

Environmental Resource	Anticipated Facility Effects		Section
Public Health and Safety	No effect	While a potential for spills and fire would exist at the facilities because of the nature of the operations, no effects from routine operations or accidents are anticipated from the facilities due to its remoteness from population centers and emergency preparedness measures.	3.16

III. GROUND DISTURBING ACTIVITY (INCLUDING EXCAVATION, GRADING, TREE REMOVALS, UTILITY INSTALLATION, CONSTRUCTION, ETC.)

DOES THIS PROJECT INVOLVE GROUND-DISTURBING ACTIVITY? YES NO (If no, proceed to section IV.)

- b. Description of width, length and depth of proposed ground disturbing activity (please include all associated disturbances (access roads, laydown areas, etc):
1. *Feedstock Processing Facility APE:*
Approximately 14.4 acres of to be graded, excavated, cleared, and used for construction of the facility. A water line will installed to include approximately 13,000 linear feet of 3" high density polyethylene pipe (see **Attachment 3**)
 2. *Biorefinery APE:*
Approximately 19.4 acres to be cleared, graded, excavated and used for construction of the facility. All utilities are existing in the ROW in Peru Drive adjacent to the property.
- c. Previous land use and disturbances:
1. *Feedstock Processing Facility APE: None*
 2. *Biorefinery APE: 16.77 acres have been cleared, excavated and graded*
- d. Current land use and conditions: *Cleared land, no current use*
- e. Does the landowner know of any archaeological resources found on the property?
Please describe: *No. See Section IV below and Attachment 5*

IV. IDENTIFICATION OF HISTORIC PROPERTIES

- a. List and date all resources (buildings, structures, objects, archaeological sites) 50 years of age or older located in the APE. If the resource is located within a National Register eligible, listed or local district it is only necessary to identify the district:
- None for either APE site.*
- b. Describe the steps taken to identify whether or not any resources eligible for the National Register

of Historic Places exist in the APE and include the level of effort made to carry out such steps:

1. *A file and records search for the Biorefinery site was conducted and reported in the attached letter from Summit Envirosolutions, November 20, 2008.*
2. *A file and records search for the Feedstock Processing Facility site was conducted and reported in the attached letter from Summit Envirosolutions, December 17, 2013.*

Based on the information contained in "b", please choose one:

- Historic Properties Present in the APE
- No Historic Properties Present in the APE

- d. Describe the condition, previous disturbance to, and history of any historic properties located in the APE: *No known historic properties for either APE site.*

V. PHOTOGRAPHS

Note: All photographs should be keyed to a map.

- a. Provide photographs of the project area itself.
- b. Provide photographs of all resources 50 years of age or older located in the APE. Digital images or clear photocopies are acceptable.

VI. DETERMINATION OF EFFECT

Based on the above information, please choose one.

- No historic properties affected based on [36 CFR § 800.4(d)(1)], please provide the justification for this determination.
- See Attachment 4 – Summit Envirosolutions' Class 1 Search Reports*
See Attachment 5 – Prior SHPO Consultation Letters regarding each APE site
- No Adverse Effect [36 CFR § 800.5(b)] on historic properties, explain why the criteria of adverse effect, 36 CFR Part 800.5(a)(1), were found not applicable.
- See Attachment 4 – Summit Envirosolutions' Class 1 Search Reports*
See Attachment 5 – Prior SHPO Consultation Letters regarding each APE site
- Adverse Effect [36 CFR § 800.5(d)(2)] on historic properties, explain why the criteria of adverse effect, [36 CFR Part 800.5(a)(1)], were found applicable.

Please print and mail completed form and any additional information to:

*Nevada State Historic Preservation Office
901 S. Stewart Street, Suite 5004
Carson City, Nevada 89701-5248*

ATTACHMENT 2

Program Introduction

Purpose:

The Advanced Drop-In Biofuel Production Project (ADBPP) is a Department of Defense (DoD)-led multi-agency effort to develop a viable commercial-scale Integrated Biofuel Production Enterprise (IBPE) that has a capacity of to produce at least 10 million gallons per year of neat biofuel. The effort intends to support the establishment of a domestic commercial-scale manufacturing facility that produces aviation and marine diesel biofuels from sustainable biomass feedstock. The DoD has indicated intention to purchase drop-in replacement biofuels that meet approved product specifications, meet the provisions of the Energy Independence and Security Act (EISA) Section 526, and can utilize the existing infrastructure, and are deliverable to the DoD fuel supply system fully blended with conventional petroleum product counterparts.

Fulcrum Sierra BioFuels, LLC, formerly Fulcrum Brighton BioFuels, LLC as awardee under Phase 1 of the ADBPP, (Fulcrum), intends to construct, own and operate a municipal solid waste (MSW) feedstock IBPE, comprised of a Feedstock Processing Facility and a Biorefinery. The project Area of Potential Effect (APE) is comprised of two sites. Located on 19.4 acres approximately 20 miles east of Reno, Nevada, the Biorefinery APE will use steam-reforming gasification, Fischer-Tropsch (FT) and fuels upgrading technologies to produce approximately 10.5 million gallons annually of renewable neat FT synthesized paraffinic kerosene (SPK) fuel from approximately 200,000 tons of MSW feedstock. The renewable SPK fuel shipped and then blended into a final fuel blend product to meet ASTM and/or military specifications for Jet A, JP-5, JP-8 or F-76 fuels. The Biorefinery is expected to be permitted as a Class II minor source of air emissions.

The Feedstock Processing Facility APE, located on approximately 14.4 acres in Lockwood, Storey County, approximately eight miles east of Reno, Nevada adjacent to the Lockwood Regional Landfill and approximately 15 miles from the Biorefinery, will include a MSW processing system engineered to incorporate a unique combination of shredding steps that remove the smaller fractions of the MSW stream. The shredded material is separated by density using an air classification system. The air classification process provides the separation needed to create Feedstock that is relatively free of moisture and includes mixed paper, textiles, wood and some mixed plastics. The heavy fraction materials include glass, inert materials, fines and very wet items. This unique combination of targeted shredding combined with bulk density separation is the fundamental driver behind the Project's ability to create a consistent Feedstock suitable for the production of SPK fuel. The processed Feedstock is baled for storage and/or transport to the Biorefinery. The Feedstock Processing Facility is expected to be permitted as a Class II minor source of air emissions.

The location for the proposed Biorefinery was subject to a previous Department of Energy Environmental Assessment (EA-1848) in which a Finding of No Significant Impact determination was finalized on June 2011. This proposed project differs from the project subject to assessment under EA-1848 in that the project's planned end product, the proposed technology, the location of the feedstock processing, and the parcel size have changed. The previous EA investigated ethanol production using alcohol synthesis technology instead of SPK fuel production using FT and fuels upgrading technologies. The feedstock processing has been relocated from the Biorefinery to be closer a 14.4 acre parcel, adjacent to the

Lockwood Regional Landfill. The footprint of the Biorefinery has increased the parcel from 16.77 acres to 19.4 acres. However, the physical characteristics of the Biorefinery site have not changed from those previously reviewed.

Currently the contractor is validating their proposed technical, economic and regulatory viability assumptions leading to a potential follow-on contract that would execute facility construction and initiate production. The DoD awarded this initial phase to multiple contractors documenting numerous technical and logistical alternatives that will compete for the follow-on contract.

Expected or known utility infrastructure upgrades required:

- a. Feedstock Processing Facility (see Attachment 3):
 - i. Install interconnection to 24.9 kV overhead electrical distribution power line existing across Mustang Road in southwest corner of the property.
 - ii. Install approximately 13,000 lateral feet of 3" HDPE potable water line in Storey County right of way along Canyon Way to private road of Lockwood Regional Landfill
 - iii. Onsite Sewage Disposal System
- b. Biorefinery (see Attachment 3)
 - i. Connect to Tahoe Reno Industrial Center Utilities (water, and sewer) currently existing in right of way of Peru Drive
 - ii. Install interconnection to natural gas distribution system currently existing in right of way of Peru Drive
 - iii. Install interconnection to existing 24.9 kV overhead electrical distribution power line currently existing in right of way of Peru Drive

Section 106 consulting planned with the following parties:

- 1) Pyramid Lake Paiute Tribe of the Pyramid Lake
- 2) Paiute-Shoshone Tribe of the Fallon Reservation and Colony
- 3) Walker-River Paiute Tribe of the Walker River Reservation
- 4) Washoe Tribe (Nevada and California)
- 5) Fort McDermitt Paiute and Shoshone Tribes
- 6) Reno-Sparks Indian Colony
- 7) Shoshone-Paiute Tribes of the Duck Valley Reservation
- 8) Yerington Paiute Tribe of the Yerington Colony & Campbell Ranch

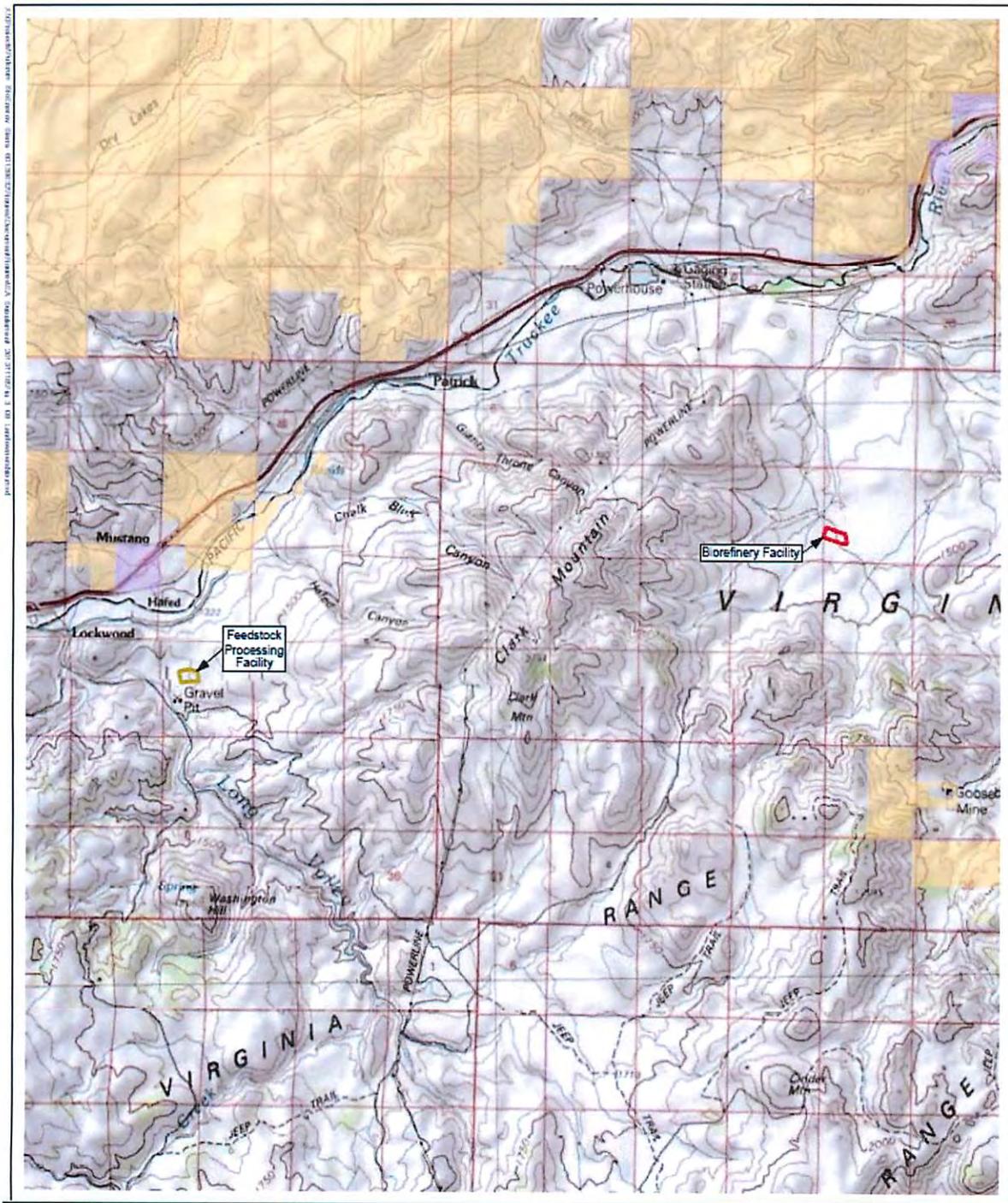
ATTACHMENT 3

Topo Maps, Photos, and Plot Plans

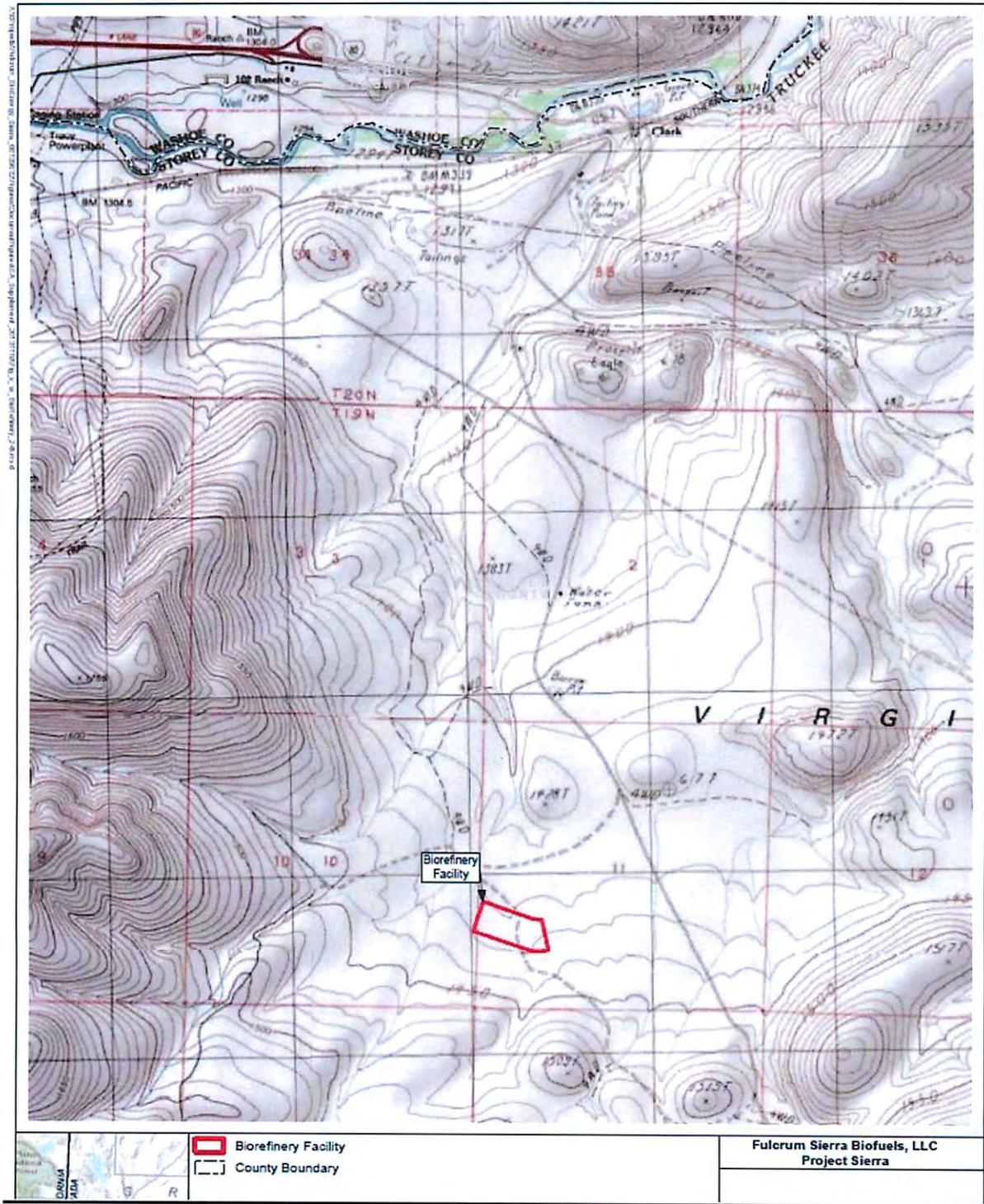
Overview of Locations of Feedstock Processing Facility and Biorefinery



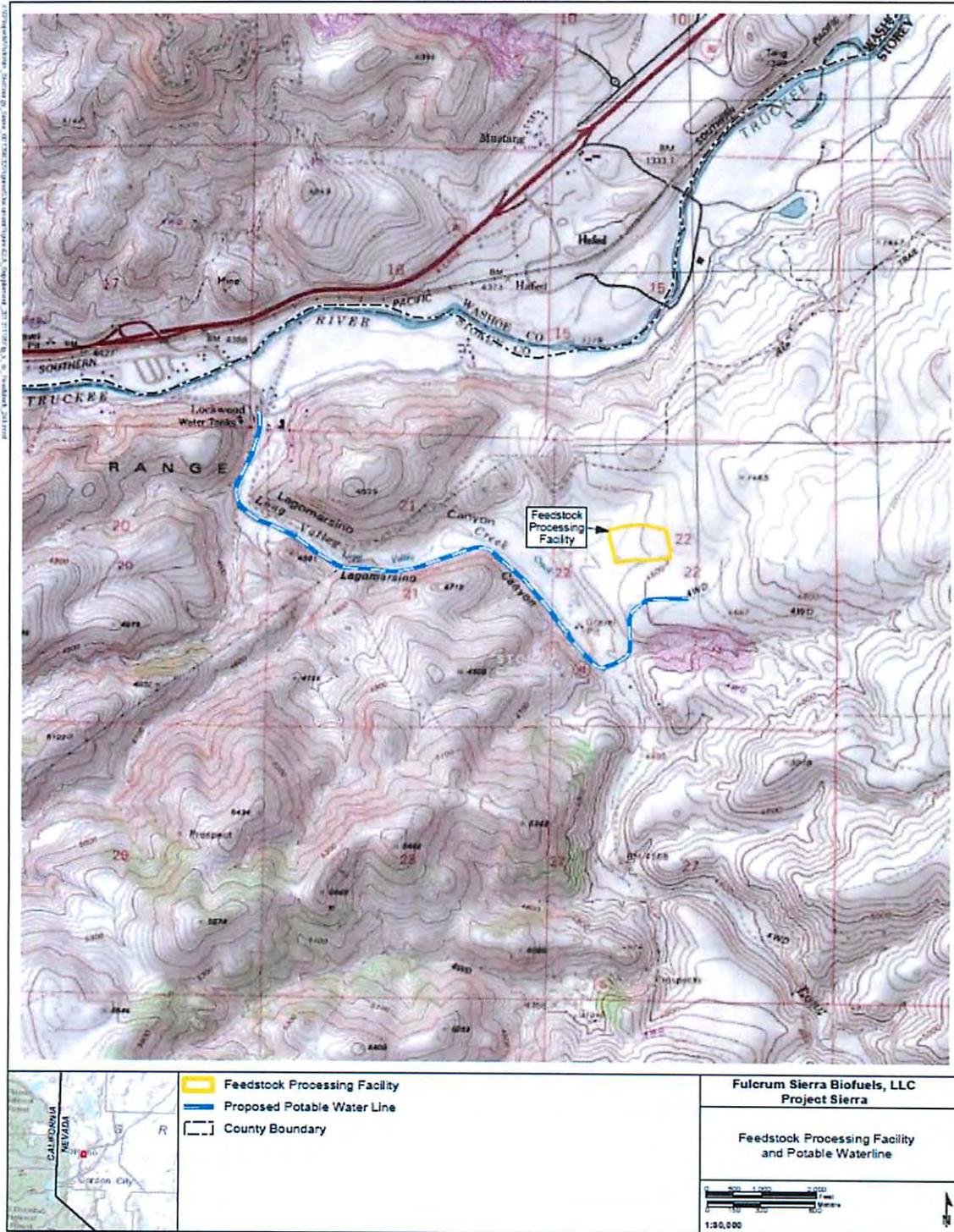
Topographic Depiction of Feedstock Processing Facility and Biorefinery Sites



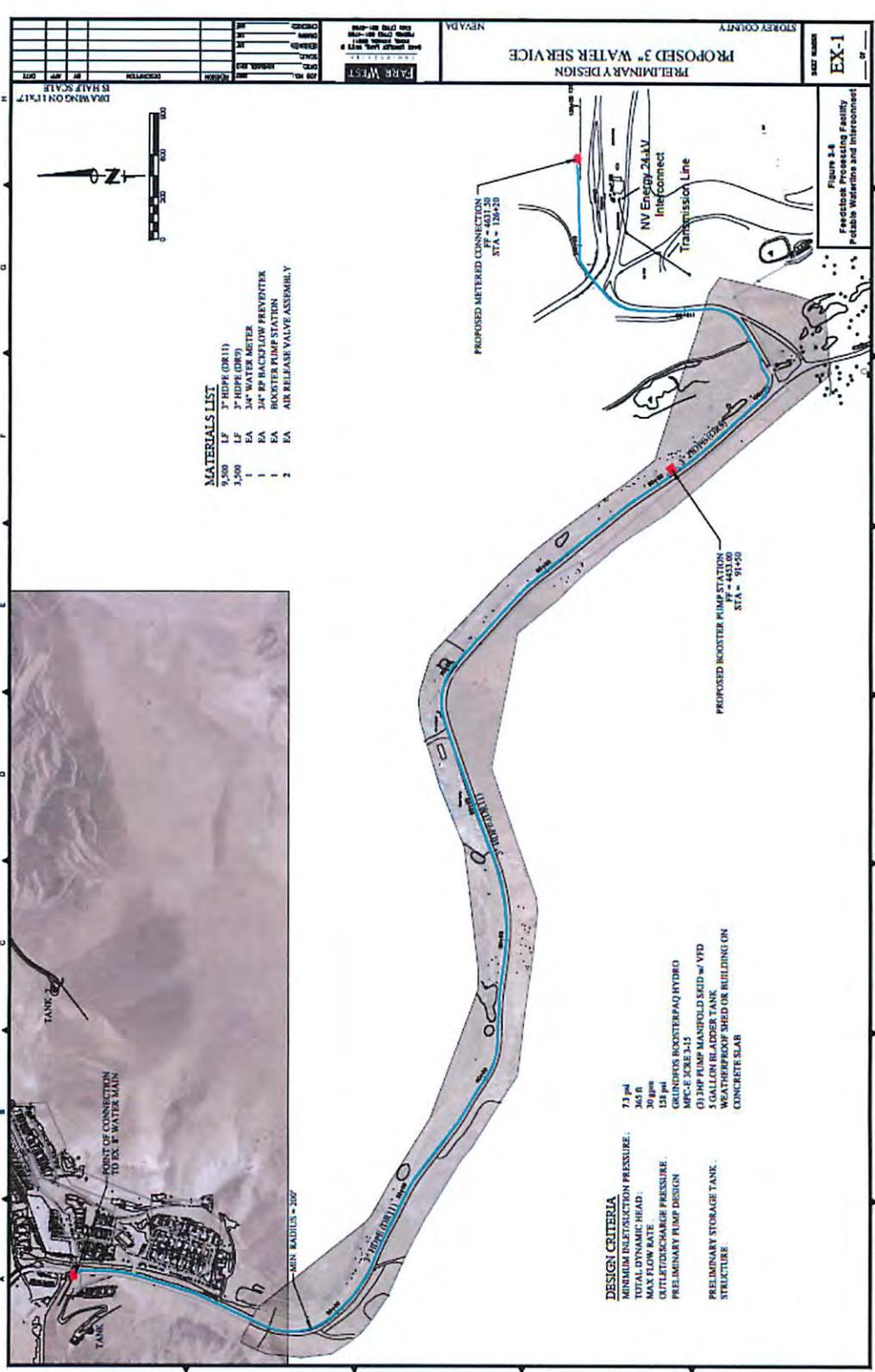
Topographic Depiction of Biorefinery



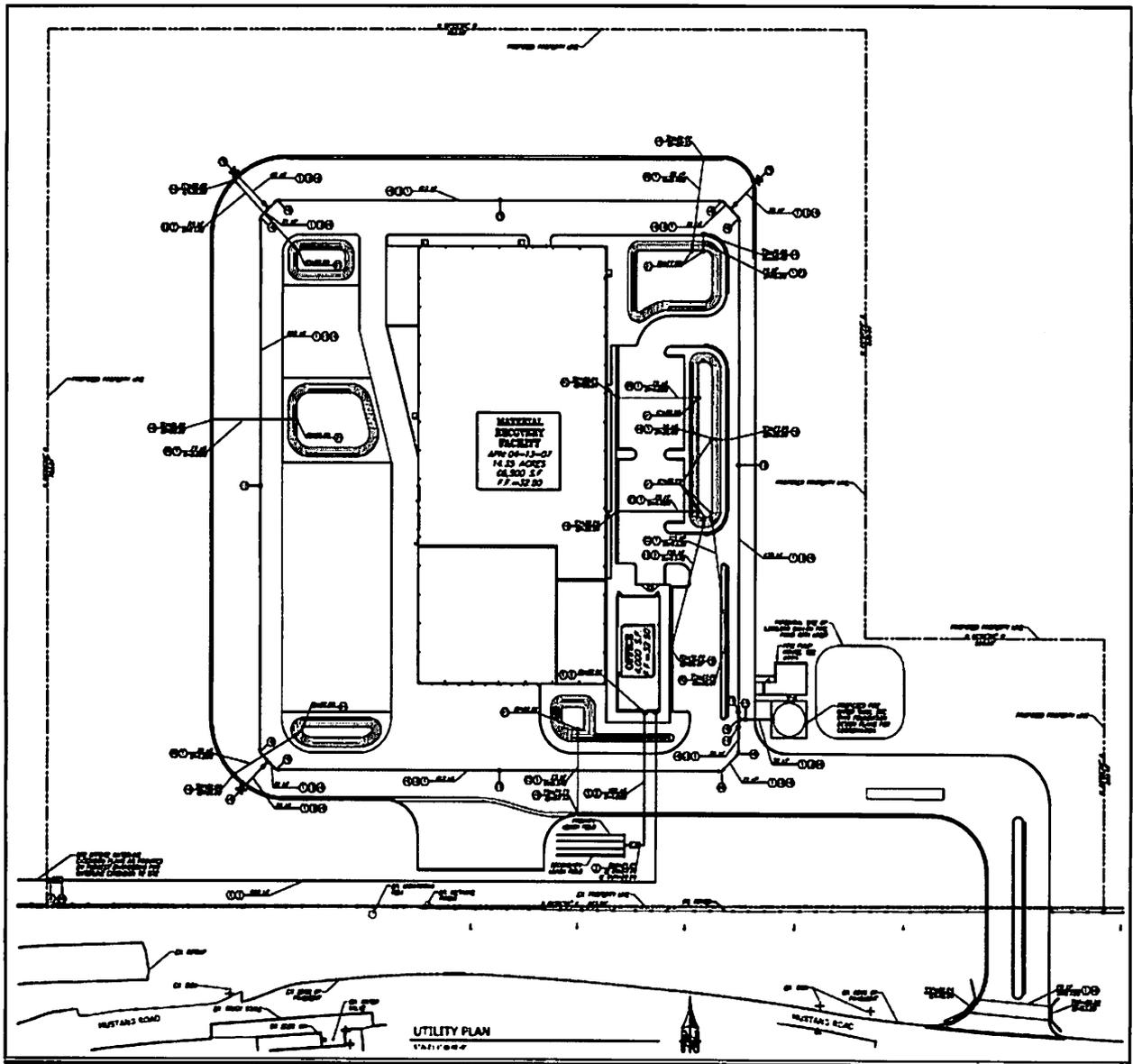
Topographic Depiction of Feedstock Processing Facility



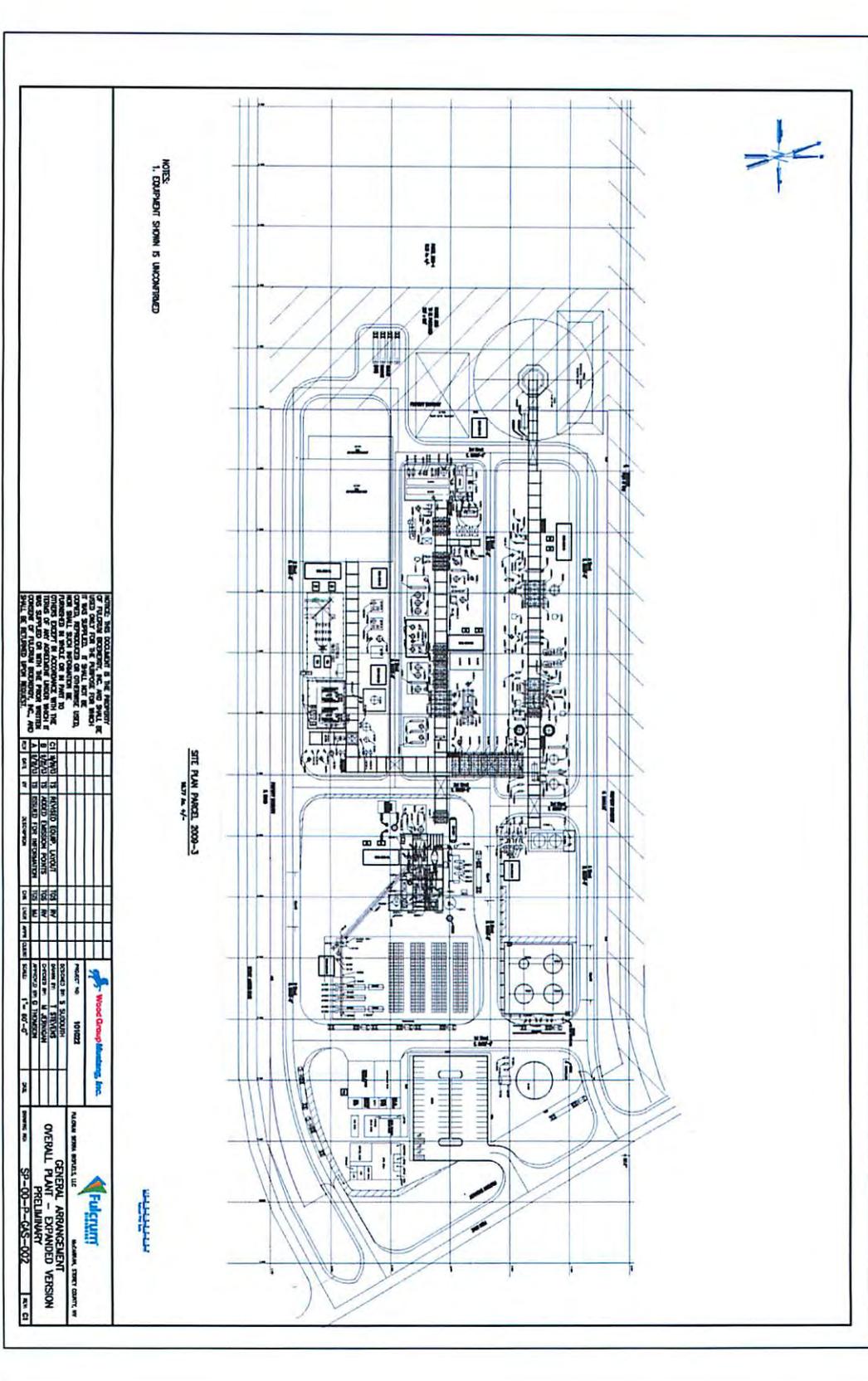
Feedstock Processing Facility Water and Utility Lines



Feedstock Processing Facility – Site Plan



Biorefinery – Site Plan



NOTES:
1. EQUIPMENT SYMBOLS UNCOMPANIED

SITE PLAN PANEL 2009-3
REV. NO. 04

NOTES: THE OCCUPANT OF THE PROPERTY OF FUTURE DEVELOPER, INC. AND SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE FACILITY. THE OCCUPANT SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE FACILITY. THE OCCUPANT SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE FACILITY. THE OCCUPANT SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE FACILITY.

NO.	DESCRIPTION	DATE	BY	CHKD BY
1	ISSUED FOR INFORMATION	1/21/09	MM	MM
2	ISSUED FOR INFORMATION	1/21/09	MM	MM
3	ISSUED FOR INFORMATION	1/21/09	MM	MM
4	ISSUED FOR INFORMATION	1/21/09	MM	MM
5	ISSUED FOR INFORMATION	1/21/09	MM	MM
6	ISSUED FOR INFORMATION	1/21/09	MM	MM
7	ISSUED FOR INFORMATION	1/21/09	MM	MM
8	ISSUED FOR INFORMATION	1/21/09	MM	MM
9	ISSUED FOR INFORMATION	1/21/09	MM	MM
10	ISSUED FOR INFORMATION	1/21/09	MM	MM

Project No. 101022
 DESIGNED BY: MM
 CHECKED BY: MM
 APPROVED BY: MM
 DATE: 1-21-09

ALUMINA BRIDGE DEVELOPMENT
Fullercent
 ALUMINA BRIDGE DEVELOPMENT
 OVERALL PLANT - EXPANDED VERSION
 PRELIMINARY
 SP-03-1-051-002
 100% CD

Photos



AECOM		PHOTOGRAPHIC LOG	
Client Name: Fulcrum BioEnergy, Inc.		Site Location: 16.77-acre parcel located at 3600 Peru Drive, McCarran, Storey County, Nevada	Project No. 12774-003-210
Photo No. 1	Date: 12/2/08		
Direction Photo Taken: Facing northwest			
Description: Subject Site			
Photo No. 2	Date: 12/2/08		
Direction Photo Taken: Facing west			
Description: Subject Site stormwater culvert			

Pictures of proposed bio-refinery site documented in EA1848, dated Jun 2011

AECOM		PHOTOGRAPHIC LOG	
Client Name: Fulcrum BioEnergy, Inc.		Site Location: 16.77-acre parcel located at 3600 Peru Drive, McCarran, Storey County, Nevada	Project No. 12774-003-210
Photo No. 3	Date: 12/2/08		
Direction Photo Taken: Facing west			
Description: Subject Site dirt access road			
Photo No. 4	Date: 12/2/08		
Direction Photo Taken: Facing north			
Description: Subject Site graded area			

Pictures of site documented in EA1848, dated Jun 2011



Photograph of the Feedstock Processing Facility Site, dated December 11, 32013

ATTACHMENT 4

Class 1 Literature Search Reports

Feedstock Processing Facility APE – Class 1 Report (3 pages)



6774 S. McCarran Blvd., Suite 101, Reno, Nevada 89509
(775) 824-8900 fax (775) 824-8908

December 17, 2013

Kim Munson
Anthropologist/Cultural Resources Specialist
AECOM Environment
1601 Prospect Parkway
Fort Collins, CO 80525

Subject: Fulcrum Sierra Biofuels Facility, Feedstock Processing Facility, Storey County, Nevada

Dear Ms. Munson:

At your request, Summit Envirosolutions, Inc. (Summit) conducted a literature search for previously recorded cultural resources for a proposed feedstock processing facility as an expansion of the Fulcrum Sierra Biofuels waste-to-ethanol facility located near Lockwood, Storey County, Nevada. The facility is located on the east side of E. Mustang Road, approximately 7 miles south of the Truckee River, and consists of approximately 15.6 acres. This facility is 10 miles southwest from the Biorefinery facility in a previously disturbed area 1,000 feet to the northwest of the Lockwood Regional Landfill. The proposed feedstock processing facility is located in the NW 1/4 of Section 22 of Township 19 North, Range 22 East, Mount Diablo Base and Meridian.

On December 16, 2013, a record search was conducted by Summit to provide information on all of the known cultural resources in the project area and within a one-mile radius of the project area. The literature search also determined which portions of the project area have been previously surveyed. The National and Nevada Registers of Historic Places were consulted for listed properties, and historic maps and other records were examined to help determine the potential for resources.

No surveys or archaeological sites have been identified within the location of the proposed facility; however, a total of 10 inventories and nine sites are located within a one-mile radius (Tables 1 and 2). One of the inventories is over a mile away, but contains linear resources that likely extend into the current literature search radius.

An examination of historic maps and land patents provided a few results. The 1906 General Land Office plat shows a road to Virginia City in Largomarsino Canyon. This road is also indicated on a 1919 state highway map as Highway 45 and on the 1957 USGS *Spanish Springs Valley, Nev.* topographic quadrangle, and is the present-day road located approximately 0.3 miles to the west of the proposed facility. There are no state patents for the property, but a federal patent was obtained for the SE 1/4 of the NW 1/4 of Section 22 by the Curtiss Wright Corporation in 1957 (Patent 1175408) as part of a land exchange under the Taylor Grazing Act of 1934.

Table 1. Previous Inventories within One-Mile Radius of Project Area

Report No.	Report Title/Project	Author and Year	Sites/Resources
NSM 15-9	The Archaeological Reconnaissance of 40 Acres in Lockwood.	F. Johnson, 1988	None
NSM 16-184, BLM 3-371	Historical and Archaeological Cultural Resources: Slope Cutting Safety Project, ID- Ir- 080-1(89) 19 Ea. 70954 (from NADB)	D. J. McNeil, 1979	None
NSM 16-184, BLM 3-1107	An Archaeological Reconnaissance of Proposed Fiber Optic Cable Construction for Nevada Bell	S. Stornetta, 1987	None
NSM 16-382	Cultural Resource Inventory of Liberty Village Proposed Subdivision Parcel, Washoe County, Nevada	S. deLaureal, 1986	26WA3638
NSM 16-666, BLM 3-1622	BLM Cultural Resources Inventory Negative Report: Nevada Bell Burial of Communications Cable, Mustang Area	J. Hufnagle, 1994	None
NSM 18-72	Class III Cultural Resources Inventory of the Sierra Pacific Power Company's Transmission Line Corridor: Valmy to Mira Loma, Nevada (from NADB)	C., Busby, J. C. Bard, B. Dawson, and P. H. Ogrey, 1979	26ST55, 26ST56
BLM 3-2365*	A Class III Cultural Resources Inventory of the Truckee River Restoration Project, Washoe and Storey Counties, Nevada	J. Ross-Hauer 2007	26WA8308, 26WA8309
BLM 3-2448	Truckee Canyon Water System Expansion Cultural Resources Inventory, Mustang, Washoe County, Nevada	D. Simons and D. Risse, 2008	26WA8358
	Class III Cultural Resources Inventory of Approximately 1500 Acres for the Proposed Lockwood Landfill Extension in Northern Storey County, Nevada	L. Hause, 1990	None
	Cultural Resources Reconnaissance Survey for the Reno-Sparks Effluent Pipeline-Wastewater Treatment Capacity Increase Project: The Effluent Pipeline Project	T. Burke, 1990	26WA1601

*Inventoried area outside of one-mile radius but contains linear resources that extend into the literature search area.

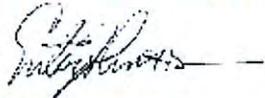
Table 2. Previously Identified Archaeological Resources within One-Mile Radius of Project Area

Site No.	Type	Description	Associated Inventory(ies)	NRHP Eligibility
26ST11, CrNV-3-494	Prehistoric	Lithic scatter	No information	No information
26ST55, CrNV-31-1222	Prehistoric	Quarry	NSM 18-72	No information
26ST56, CrNV-31-1223	Prehistoric	Lithic scatter	NSM 18-72	Not Eligible
26ST198	Prehistoric	Isolated modified flake	Hause 1990	No information
26WA1601	Prehistoric	Rock art and lithic scatter	Burke 1990	Eligible
26WA3638	Prehistoric/Historic	Lithic scatter and debris	NSM 16-382	Non-significant
26WA8308, CrNV-03-8308	Historic	Southern Pacific Railroad	BLM 3-2365	Eligible (A)
26WA8309, CrNV-03-6456	Historic	Telegraph Line	BLM 3-2365	Eligible (A and D)
26WA8358, CrNV-03-6814	Historic	Refuse poss. associated with the SPRR	BLM 3-2448	Unevaluated

As a result of the literature search and previous surveys near the project area, the potential for significant cultural resources within the current project area is low. The project area is located in the foothills of the Virginia Range, approximately 0.7 miles south of the Truckee River corridor. Although this corridor is rich in both prehistoric and historic-period resources, the project area is located well outside of this area and has been previously disturbed. Therefore, the potential for intact, significant cultural resources within the proposed facility area is extremely low. The Southern Pacific Railroad and adjacent telegraph line along the river are eligible under National Register Criterion A; however, the proposed facility will have no visual impact to these resources. Other modern development in the area, including a large housing and industrial complex, has already affected the setting and historic feeling of the area.

If you have any questions about the cost estimate, please contact me at (775) 824-8900 or ejohnson@summite.com.

Sincerely,
Summit Enviroolutions, Inc.

A handwritten signature in black ink, appearing to read "Erika Johnson", followed by a horizontal line.

Erika Johnson, MA, RPA
Cultural Resources Program Manager

Biorefinery APE – Class 1 Report (2 pages)

6774 South McCarran Blvd., Suite 101, Reno, Nevada 89509
(775) 824-8900 fax (775) 824-8908

November 20, 2008

Kim Munson
ENSR
601 Prospect Parkway
Fort Collins, CO 80525

Subject: Project Sierra, Fulcrum Sierra Biofuels Facility, Storey County, Nevada
Summit Project No. 1393-006

Dear Ms. Munson:

At your request, Summit Envirosolutions, Inc. (Summit) has performed a literature search for previously recorded cultural resources for a proposed waste-to-ethanol facility located at the Tahoe Reno Industrial Center in Storey County, Nevada. The facility is located on the west side of Peru Drive within Parcels 2008-13 and 2008-13A, totaling 30 acres. The facility is in the E $\frac{1}{2}$ of Section 10 and the W $\frac{1}{2}$ of Section 11 of Township 19 North, Range 22 East, Mount Diablo Base and Meridian.

On November 19 and 20, 2008, a record search was conducted by Summit to provide information on all of the known cultural resources in the project area and within a one-mile radius of the project area. The literature search also determined which portions of the project area have been previously surveyed. The National and Nevada Registers of Historic Places were consulted for listed properties, and historic maps and other records were examined to help determine the potential for resources.

No surveys or cultural resources were identified within a mile of the project area using NVCRIS; however, one inventory and site were identified through a files search at the Nevada State Museum (Table 1). No previous inventories for cultural resources have been conducted within the project area.

Table 1. Previous Inventories within One-Mile Radius of Project Area

Reports	Author	Sites/ Resources	NRHP Status
Cultural Resources Inventory of the Gilman Block, Storey County, Nevada (NSM Report 15-38)	Robert Kautz, 2003	26ST228	Not Eligible

The previous survey consists of 253 acres and is located in the NE $\frac{1}{4}$ of Section 11, the SE $\frac{1}{4}$ of Section 2, and the SW $\frac{1}{4}$ of Section 1 of Township 19 North, Range 22 East. Cultural resources identified include one archaeological site and six isolated finds. The site (26ST228) is a small

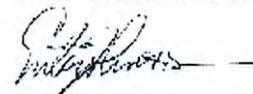
prehistoric lithic scatter consisting of four cryptocrystalline silicate (CCS) flakes. The isolates consist of four prehistoric flakes, one historic canning lid band, and one historic cadastral marker. All of the cultural resources are not eligible for the National Register of Historic Places.

An examination of historic maps and land patents provided negative results. The 1884 and 1912 General Land Office plat for the township show no mapped features within or surrounding the project area. The 1893 USGS 30-minute *Reno, NV* topographic quadrangle also shows no features. Two two-track roads are shown on the 1957 USGS 7.5-minute *Wadsworth, Nev.* topographic quadrangle. The roads fork, one ended to the south and one ending to the west. Both of the roads originate near Clark to the north. No land patents were found searching the GLO records database or the Nevada Division of State Lands database. There are no listed properties within the project area. The closest listed properties include several buildings in Sparks, Derby Diversion Dam 19 miles east of Sparks, and the Lagomarsino petroglyphs to the south.

As a result of the literature search and the previous survey near the project area, the potential for significant cultural resources within the current project area is low. The project area is located within the foothills of the Virginia Range, approximately 2 miles south of the Truckee River corridor. Although this corridor is rich in both prehistoric and historic-period resources, the project area is located well outside of this area and is situated in an environment with low shrubby vegetation and sediment commonly composed of desert pavement. This environment has limited potential for intact, significant cultural resources.

If you have any questions or need further information, please do not hesitate to contact me at (775) 824-8900 or ejohnson@summite.com.

Sincerely,
Summit Envirosolutions, Inc.



Erika Johnson, MA, RPA
Cultural Resources Program Manager

ATTACHMENT 5

Previous SHPO Consultation Letters

Biorefinery APE– Previous SHPO Consultation

Site response (#2011-1446)



MICHAEL E. FISCHER
Department Director

STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS
State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701
(775) 684-3448 • Fax (775) 684-3442
www.nvshpo.org

RONALD M. JAMES
State Historic Preservation Officer

February 14, 2011

Matthew McMillen
Director, Environmental Compliance Division
LP-10
U.S. Department of Energy
1000 Independence Ave. S.W.
Washington, DC 20585

RE: Loan Guarantee to Fulcrum Sierra Biofuels, LLC for a Waste-to-Ethanol Facility in McCarran, Storey County (Undertaking #2011-1446).

Dear Mr. McMillen:

The Nevada State Historic Preservation Office (SHPO) reviewed the subject undertaking. The SHPO concurs with the U.S. Department of Energy's determination that the proposed undertaking will not pose an adverse effect to any historic properties.

The SHPO notes that consultation with the affected Native American representatives will be initiated. If this consultation results in the identification of properties of religious or cultural significance that could be affected by the undertaking, you must initiate additional consultation with this office concerning the National Register eligibility and possible effects of the undertaking.

If buried and previously unidentified resources are located during project activities, the SHPO recommends that all work in the vicinity cease and this office be contacted for additional consultation per 36 CFR 800.13.b.3. and NRS 383.150-383.190.

If you have any questions concerning this correspondence, please feel free to contact me at (775) 684-3443 or by e-mail at Rebecca.Palmer@nevadaculture.org.

Sincerely,

Rebecca Lynn Palmer, Deputy
State Historic Preservation Officer

Feedstock Processing Facility APE – Previous SHPO Consultation

FINDING OF NO SIGNIFICANT IMPACT

From:

Nevada Division of Environmental Protection
901 South Stewart Street
Carson City, Nevada 89701-5249
(775) 687-9431

As required by NAC 445.42116 through NAC 445.42128, an environmental review has been performed on the proposed project listed below:

Projects: Canyon General Improvement District
Treated Effluent Line Extension

Location: East end of Ave de Couleurs in the Rainbow Bend Subdivision
Storey County, Nevada

Latitude 39° 30' 44" W
Longitude 119° 38' 14" W

Project Numbers: CS32-0944s

This project covers the construction of 8,000 feet of effluent force main that will deliver secondary treated effluent from the Canyon GID Wastewater Treatment Plant up to a reuse holding pond in the Lockwood Regional Landfill. This project will provide an environmental benefit by greatly reducing the seepage of effluent in a leach field that is located in close proximity to a public drinking water supply well that serves this subdivision. The effluent line will transmit this effluent two miles uphill to the regional landfill where it will be used for dust control application.

This project is being funded by the federal funds from the American Recovery and Reinvestment Act (ARRA) of 2009.

Specific activities to construct this proposed project that may constitute an environmental disturbance include site clearing for trench excavation for the effluent line. The majority of this disturbance will be in uninhabited hillside areas and will be within a 30 foot wide easement. Reparations for any land disturbance will be completed as required by the easement grants.

The Division's environmental review process did not indicate significant environmental impacts from this project construction. Therefore, a finding of no significant impact (FONSI) is the preliminary determination made by the Division. Information supporting this decision is available for public review at the office of the Division listed above.

Comments supporting or disagreeing with this decision may be submitted to the Division at the address listed above for the attention of Joseph Maez, P.E. or by email at jmaez@ndep.nv.gov. After evaluating all comments received, the Division will make a final decision on whether to issue this FONSI ruling. The deadline for comment to the Division on this project is set for **June 30, 2009**.



JIM GIBBONS
Governor

MICHAEL L. FISCHER
Department Director

STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS

State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701
(775) 684-3443 • Fax (775) 684-3442
www.nvshpo.org

RONALD M. JAMES
State Historic Preservation Officer

May 26, 2009

Dan Sommers
Farr West Engineering
55 Geraldine Court
Sparks NV 89441

RE: Canyon GID Sewer System Improvements Project.

Dear Mr. Sommers:

The Nevada State Historic Preservation Office (SHPO) initiated its review of the subject undertaking. In order to determine the archaeological sensitivity of the project area, the SHPO consulted the online statewide archaeological inventory (NVCRIS). According to these records, the project area has not been surveyed for cultural resources. No sites have been previously recorded in the project area. Given the previous disturbances present in the project area, the SHPO would not recommend an archaeological inventory of the project area.

As no historic properties are likely to be affected in the area of potential effects (APE) for the subject undertaking, the SHPO would concur with an U.S. Environmental Protection Agency determination of No Properties for the subject undertaking. According to the National Historic Preservation Act of 1966, as amended, federal agencies are required to make determinations of eligibility and effect. In this case, if the U.S. Environmental Protection Agency were to request our concurrence with a determination of "No Properties" our office would be happy to expedite the request.

If buried and previously unidentified resources are located during project activities, the SHPO recommends that all work in the vicinity cease and this office be contacted for additional consultation per 36 CFR 800.13.b.3. and NRS 383.150-383.190.

If you have any questions concerning this correspondence, please contact me by phone at (775) 684-3443 or by e-mail at Rebecca.Palmer@nevadaculture.org.

Sincerely,

Rebecca Lynn Palmer
Review and Compliance Officer, Archaeologist

Appendix G

Responses to Comments