

**PRELIMINARY ENVIRONMENTAL ASSESSMENT**  
DOI-BLM-W010-2014-0031-EA

**City of Winnemucca  
Wastewater Treatment Project**



Humboldt River Field Office/Nevada

**February 2016**

U.S. Bureau of Land Management  
Humboldt River Field Office  
Winnemucca District  
5100 E. Winnemucca Boulevard  
Winnemucca, NV 89445



It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/NV/WN/EA/16-01+1792

DOI-BLM-NV-W010-2014-0031-EA

# TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	IDENTIFYING INFORMATION.....	1
1.1.1	Project Title and Type.....	1
1.1.2	Project Location.....	1
1.1.3	Preparing Office.....	1
1.1.4	Subject Function Code and Serial Number.....	1
1.1.5	Applicant Name.....	1
1.2	BACKGROUND INFORMATION.....	1
1.3	PURPOSE AND NEED FOR ACTION.....	2
1.4	DECISION TO BE MADE.....	2
1.5	PERMITS AND APPROVALS.....	2
1.6	SCOPING, PUBLIC INVOLVEMENT AND ISSUES.....	4
<b>2.0</b>	<b>PROPOSED ACTION AND ALTERNATIVES.....</b>	<b>7</b>
2.1	PROPOSED ACTION.....	7
2.1.1	Project Location and Access.....	7
2.1.2	Project Description.....	8
2.1.3	Construction Activities.....	19
2.1.4	Construction-Related Ground Disturbance.....	20
2.1.5	Construction Schedule and Workforce.....	20
2.1.6	Construction Equipment.....	21
2.1.7	Construction Reclamation.....	21
2.1.8	Operation and Maintenance.....	22
2.1.9	Environmental Protection Measures.....	22
2.2	NO ACTION ALTERNATIVE.....	26
2.3	ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL.....	26
2.3.1	Wetland Construction Alternative.....	26
2.3.2	Private Lands Alternative.....	26
2.4	CONFORMANCE WITH LAND USE PLANS.....	26
2.5	RELATIONSHIP TO LAWS, REGULATIONS, AND OTHER PLANS.....	27
<b>3.0</b>	<b>AFFECTED ENVIRONMENT.....</b>	<b>28</b>
3.1	SUPPLEMENTAL AUTHORITIES AND ADDITIONAL RESOURCES.....	28
3.2	GENERAL SETTING.....	31
3.3	AIR QUALITY.....	32
3.4	ENVIRONMENTAL JUSTICE.....	33
3.4.1	Minority Populations.....	35
3.4.2	Income and Poverty Status.....	37
3.4.3	Property Values of Adjacent Properties.....	38
3.5	FLOODPLAINS.....	39
3.6	HUMAN HEALTH AND SAFETY.....	39
3.7	MIGRATORY BIRDS.....	40
3.8	WATER QUALITY, SURFACE AND GROUND.....	40
3.9	WETLANDS AND RIPARIAN ZONES.....	42

3.10	LANDS AND REALTY .....	42
3.11	SOCIAL AND ECONOMIC VALUES .....	43
	3.11.1 Population and Housing.....	43
	3.11.2 Labor Force and Employment .....	45
	3.11.3 Labor and Personal Income .....	49
	3.11.4 Local Government Finances .....	50
	3.11.5 Community Facilities and Services .....	51
	3.11.6 Health Care .....	52
	3.11.7 Utilities.....	52
3.12	VISUAL RESOURCES.....	53
<b>4.0</b>	<b>ENVIRONMENTAL CONSEQUENCES.....</b>	<b>55</b>
4.1	DIRECT AND INDIRECT IMPACTS .....	55
	4.1.1 Air Quality .....	55
	4.1.2 Environmental Justice.....	56
	4.1.3 Floodplains.....	58
	4.1.4 Human Health and Safety .....	58
	4.1.5 Migratory Birds.....	59
	4.1.6 Water Quality (Surface and Ground).....	59
	4.1.7 Wetlands and Riparian Zones .....	60
	4.1.8 Lands and Realty.....	61
	4.1.9 Social and Economic Values .....	62
	4.1.10 Visual Resources.....	64
4.2	CUMULATIVE IMPACTS .....	64
	4.2.1 Cumulative Impacts .....	65
<b>5.0</b>	<b>TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED.....</b>	<b>66</b>
5.1	NATIVE AMERICAN CONSULTATION .....	66
5.2	COORDINATION AND/OR CONSULTATION (AGENCIES).....	66
5.3	INDIVIDUALS AND/OR ORGANIZATIONS CONSULTED .....	66
5.4	PUBLIC OUTREACH/INVOLVEMENT.....	66
<b>6.0</b>	<b>LIST OF PREPARERS.....</b>	<b>67</b>
<b>7.0</b>	<b>REFERENCES.....</b>	<b>68</b>
<b>8.0</b>	<b>FIGURES.....</b>	<b>73</b>

### LIST OF TABLES

Table 1.5-1	Authorizations, Permits, Reviews, and Approvals .....	3
Table 1.5-2	Other Authorized Right-of-Way Holders that Require Contact and Coordination .....	3
Table 1.6-1	Scoping and Issues.....	4
Table 2.1-1	Influent Characteristics .....	8
Table 2.1-2	Effluent Discharge Requirements .....	11
Table 2.1-3	Light Fixture Specifications for Outdoor Facility Lighting.....	15
Table 2.1-4	Proposed Surface Disturbance .....	20

Table 2.1-5	Proposed Construction Equipment .....	21
Table 3.1-1	List of Supplemental Authorities .....	28
Table 3.1-2	Additional Resources .....	30
Table 3.4-1	Environmental Justice Populations: Minority Population of Assessment Area.....	36
Table 3.4-2	Environmental Justice: Minority Populations.....	37
Table 3.4-3	Environmental Justice Populations: Low-Income Population of Assessment Area.....	38
Table 3.4-4	Environmental Justice Populations: Low-Income Populations .....	38
Table 3.10-1	Authorized ROWs in Project Area .....	42
Table 3.11-1	Population Characteristics of the Affected Environment .....	44
Table 3.11-2	Population Trends of Humboldt County and the City of Winnemucca.....	44
Table 3.11-3	Housing Characteristics - 2013 .....	45
Table 3.11-4	2015 Employment Statistics .....	48
Table 3.11-5	Personal Income by Place of Residence .....	49
Table 3.11-6	Humboldt County Local Government Finances 2014 .....	50
Table 3.11-7	City of Winnemucca Local Government Finances 2014.....	51
Table 4.1-1	Fugitive and Gaseous Emissions Associated with the Project.....	55
Table 6.0-1	Bureau of Land Management Preparers, Reviewers, and Technical Specialists .....	67
Table 6.0-2	Third-Party Contractor – Stantec Consulting Services Inc.....	67

## LIST OF FIGURES

Figure 1.2-1	General Location
Figure 2.1-1	Proposed Action
Figure 2.1-2	Treatment Plant Detail
Figure 2.1-3	Schematic of Modified Ludzack-Ettinger Bioreactor System
Figure 2.1-4	Lighting Plan
Figure 2.2-1	Existing Treatment Plant Layout
Figure 3.4-1	Adjacent Property Values
Figure 3.5-1	Floodplains
Figure 3.6-1	Human Health and Safety
Figure 3.8-1	Groundwater Resources
Figure 3.9-1	Wetlands
Figure 3.10-1	Land Status
Figure 3.11-1	Social and Economic Values Assessment Area
Figure 4.1-1	Visual Resources Assessment Area

## LIST OF CHARTS

Chart 3.11-1	At-Place Employment by Sector, Humboldt County.....	46
Chart 3.11-2	At-Place Employment by Sector, City of Winnemucca .....	47
Chart 3.11-3	At-Place Employment by Sector, Census Tract 105.....	48

## LIST OF ACRONYMS & ABBREVIATIONS

<b>°F</b>	Degrees Fahrenheit
<b>AMSL</b>	above mean sea level
<b>BLM</b>	Bureau of Land Management
<b>BOD</b>	biochemical oxygen demand
<b>CFR</b>	Code of Federal Regulations
<b>CO</b>	Carbon monoxide
<b>CO<sub>2e</sub></b>	Carbon dioxide equivalent
<b>E.</b>	East
<b>EA</b>	Environmental Assessment
<b>EMS</b>	Emergency Medical Services
<b>EPA</b>	Environmental Protection Agency
<b>EPM</b>	Environmental Protection Measures
<b>ESA</b>	Environmental Site Assessment
<b>FEMA</b>	Federal Emergency Management Agency
<b>GHG</b>	Greenhouse gas
<b>GIS</b>	Geographic Information Systems
<b>gpm</b>	gallons per minute
<b>HGH</b>	Humboldt General Hospital
<b>I-80</b>	Interstate 80
<b>in/min</b>	inches per minute
<b>IPS</b>	influent pumping station
<b>mg/L</b>	milligrams per liter
<b>mgd</b>	million gallons per day
<b>MLEBS</b>	Modified Ludzack-Ettinger Bioreactor System
<b>N.</b>	North
<b>NAC</b>	Nevada Administrative Code
<b>NDEP</b>	Nevada Division of Environmental Protection
<b>NDWR</b>	Nevada Division of Water Resources
<b>NHT</b>	National Historic Trails
<b>NO<sub>x</sub></b>	Oxides of Nitrogen
<b>NRS</b>	Nevada Revised Statutes
<b>Pezonella</b>	Pezonella Associates, Inc.
<b>PM<sub>10</sub></b>	Particulate matter 10 microns in diameter or less
<b>PM<sub>2.5</sub></b>	Particulate matter 2.5 microns in diameter or less
<b>ppm</b>	parts per million
<b>PVC</b>	Polyvinyl chloride
<b>R&amp;PP</b>	Recreation and Public Purposes Act
<b>R.</b>	Range
<b>RIBs</b>	rapid infiltration basins
<b>RMP</b>	Resource Management Plan
<b>ROW</b>	Rights-of-Way
<b>SO<sub>2</sub></b>	Sulfur dioxide
<b>T.</b>	Township

**U.S.**  
**USFWS**  
**VOC**

United States  
United States Fish and Wildlife Service  
Volatile Organic Compounds

## **1.0 INTRODUCTION**

### **1.1 Identifying Information**

#### 1.1.1 Project Title and Type

City of Winnemucca Wastewater Treatment Project, DOI-BLM-NV-W010-2014-0031-EA, Environmental Assessment (EA)

#### 1.1.2 Project Location

Humboldt County, Nevada

The proposed project is located in Township (T.) 36 North (N.), Range (R.) 37 East (E.), sections 28 and 32, Mount Diablo Meridian.

#### 1.1.3 Preparing Office

Bureau of Land Management (BLM)

Humboldt River Field Office

5100 East Winnemucca Boulevard

Winnemucca, NV 89445

#### 1.1.4 Subject Function Code and Serial Number

2740 Recreation and Public Purposes (R&PP) Act

N-92898

#### 1.1.5 Applicant Name

City of Winnemucca

### **1.2 Background Information**

The City of Winnemucca is located in the southeast portion of Humboldt County, in northern Nevada, approximately 167 miles northeast of Reno. The City of Winnemucca's existing wastewater treatment and effluent disposal facility have been in operation for approximately 50 years, providing treatment of residential and commercial wastewater produced within the City of Winnemucca's service area. The facilities are located in close proximity to the Humboldt River (about 500 feet from the riverbank), northwest of central Winnemucca between Interstate 80 (I-80) and the Union Pacific railroad tracks (Figure 1.2-1). The United States (U.S.) Environmental Protection Agency (EPA), and the Nevada Division of Environmental Protection (NDEP), has expressed concerns with the location of the existing effluent disposal site and the condition of the existing treatment facility. Specifically, the EPA and NDEP are concerned with the potential hydraulic connection between the existing rapid infiltration basins (RIBs) and the Humboldt River, as well as the potential for nitrate contamination of the groundwater.

The City of Winnemucca and the NDEP have had discussions evaluating alternative solutions for wastewater treatment and effluent disposal. The City of Winnemucca has contracted the engineering of a new and more efficient effluent disposal system that decommissions the existing RIBs and implements a treatment disposal system which includes new RIBs and water reuse methods. The new facility would be located 3.6 miles west of the existing facilities, in Humboldt County, Nevada (Figure 1.2-1).

The area identified for the proposed treatment, disposal and reuse facility consists of public and city-owned private lands. The public lands are administered by the BLM, Humboldt River Field Office. The City of Winnemucca has submitted an Application for Land for R&PP (Form 2740-1) to the BLM in order to acquire the public land through the R&PP Act. If this project is approved, the BLM would convey the public lands to the City of Winnemucca, via patent, for the construction and operation of the proposed treatment, disposal, and wastewater reuse facility.

### **1.3 Purpose and Need for Action**

The BLM's purpose for the federal action is to provide the City of Winnemucca with the opportunity to relocate the existing water treatment facility out of the floodplain, to a location that provides a long-term solution for wastewater treatment.

The need for the action is established by BLM's responsibility under the R&PP Act of 1954, Section 212 of Federal Land Policy and Management Act of 1976 and Part 2740 of the Code of Federal Regulations (CFR), to respond to an R&PP application.

### **1.4 Decision to be Made**

The authorized officer would make the decision to convey public lands to the City of Winnemucca and under what conditions, or make the decision to not convey public lands to the City of Winnemucca.

### **1.5 Permits and Approvals**

The City of Winnemucca and/or its contractors are responsible for obtaining valid permits and approvals from all relevant federal and state agencies to construct and operate the proposed project. There are no known required permits or approvals that must be granted by a local municipal agency. Federal, state, and county permits and approvals needed for this project are shown in Table 1.5-1.

**Table 1.5-1 Authorizations, Permits, Reviews, and Approvals**

Action Requiring Permit, Approval, Authorization, or Review	Required Permit/Approval/Authorization	Accepting Authority/Approving Agency	Statutory Reference
<b>Federal</b>			
Acquisition of BLM managed public land for the operation of wastewater treatment facility	R&PP Patent	BLM Humboldt River Field Office	R&PP of 1954 (Public Law 113-296); U.S. Code 869; 43 CFR 2740; and 43 CFR 2912
<b>State</b>			
Construction activities resulting in greater than five acres of disturbance	Operating Permit for Surface Area Disturbance, includes a Dust Control Plan	NDEP, Bureau of Air Pollution Control	Nevada Administrative Code (NAC) 445B.22037
Construction activities resulting in greater than one acre of disturbance	Construction Storm Water Permit; including Storm Water Pollution Prevention Plan and Notice of Intent	NDEP, Bureau of Water Pollution Control	Nevada Revised Statutes (NRS) 445A.300-730
Production of water from a new groundwater well	Change Point of Diversion for Existing Appropriated Water Rights	Nevada Division of Water Resources (NDWR), State Engineer	NRS 533.345
Discharge to waters of the State to include discharge to groundwater or pond discharge, RIBs, and re-use	Water Pollution Control Discharge Permit	NDEP, Bureau of Water Pollution Control	NAC 445A.275, NRS 445A.300 to 445A.730
<b>County</b>			
Use of authorized rights-of-way (ROW) for installation of influent pipeline	Agreement	Humboldt County	-

The City of Winnemucca is also required to coordinate with other ROW holders within the proposed pipeline corridor. Other authorized and pending ROW holders are presented in Table 1.5-2.

**Table 1.5-2 Other Authorized Right-of-Way Holders that Require Contact and Coordination**

Right-of-Way Holder	Case File Number	Type of Right-of-Way	Status	Legal Description
Humboldt County	N-51585	Road	Authorized	T. 36 N., R. 37 E., section 32
Humboldt County	N-53607	Road	Authorized	T. 36 N., R. 37 E., section 28
Nevada Bell	N-51360	Telephone Line	Authorized	T. 36 N., R. 37 E., sections 28 & 32
Sierra Pacific Power Company	N-17686	Transmission Line	Authorized	T. 36 N., R. 37 E., section 28

<b>Right-of-Way Holder</b>	<b>Case File Number</b>	<b>Type of Right-of-Way</b>	<b>Status</b>	<b>Legal Description</b>
Sierra Pacific Power Company	N-43040	Transmission Line	Authorized	T. 36 N., R. 37 E., section 32
Sierra Pacific Power Company	N-92878	Transmission Line	Authorized	T. 36 N., R. 37 E., section 28
Sprint Communications	N-42787	Telephone Line	Authorized	T. 36 N., R. 37 E., section 32
Southwest Gas	N-64630	Gas Pipeline	Authorized	T. 36 N., R. 37 E., section 28
Southwest Gas	N-65131	Gas Pipeline	Authorized	T. 36 N., R. 37 E., section 28
Union Pacific Railroad	NVCC-004692	Railroad	Authorized	T. 36 N., R. 37 E., section 32
Wester Wallace	N-75457	Road	Authorized	T. 36 N., R. 37 E., section 28

## 1.6 Scoping, Public Involvement and Issues

The project was internally scoped by the BLM Interdisciplinary Team in February 2015. On February 25, 2015, the BLM resource specialists met with City of Winnemucca representatives and their environmental consultants to discuss the proposed project and potential issues and alternatives. Preliminary issues identified for analysis are presented in Table 1.6-1.

**Table 1.6-1 Scoping and Issues**

<b>Scoping Topic and Issue Statement(s)</b>	<b>Section Addressed</b>
<p><b>Air Quality</b></p> <ul style="list-style-type: none"> <li>What are the expected emissions from construction and operation of the Proposed Action for: <ul style="list-style-type: none"> <li>-Criteria Pollutants?</li> <li>-Green House Gases?</li> <li>-Hazardous Air Pollutants?</li> </ul> </li> <li>Would the project expose sensitive receptors to pollutant concentrations exceeding standards?</li> </ul>	Section 3.3
<p><b>Cultural Resources</b></p> <ul style="list-style-type: none"> <li>What effect would the Proposed Action have on sites listed on, or eligible for listing on the National Register of Historic Places?</li> <li>What indirect effects might the visual intrusion of the project have on cultural sites?</li> </ul>	Section 3.1
<p><b>Environmental Justice</b></p> <ul style="list-style-type: none"> <li>Would the Proposed Action have disproportionate adverse impacts on minority or low-income populations?</li> </ul>	Section 3.4
<p><b>Floodplains</b></p> <ul style="list-style-type: none"> <li>Would the Proposed Action have adverse impacts on floodplain, such as reducing storage capacity or risk of surface water contamination in the event of a flood or pipeline failure?</li> </ul>	Section 3.5
<p><b>General Wildlife</b></p> <ul style="list-style-type: none"> <li>What effects would the Proposed Action have on wildlife and habitat within the project area?</li> </ul>	Section 3.1
<p><b>Human Health and Safety</b></p> <ul style="list-style-type: none"> <li>Would a rupture of the influent pipeline conflict with traffic on Jungo Road?</li> </ul>	Section 3.6

Scoping Topic and Issue Statement(s)	Section Addressed
<b>Lands and Realty</b> <ul style="list-style-type: none"> <li>How does the Proposed Action affect any existing ROWs and other R&amp;PP applications?</li> </ul>	Section 3.10
<b>Migratory Birds</b> <ul style="list-style-type: none"> <li>What effects would the Proposed Action have on migratory birds and their use of the project area for breeding, nesting, migration, and foraging?</li> </ul>	Section 3.7
<b>National Historic Trails</b> <ul style="list-style-type: none"> <li>What effect would the project have on National Historic Trails (NHT)?</li> </ul>	Section 3.1
<b>Native American Religious Concerns</b> <ul style="list-style-type: none"> <li>Are there any Native American Religious Concerns related to the proposed project?</li> </ul>	Section 3.1
<b>Noise</b> <ul style="list-style-type: none"> <li>Would construction of the Proposed Action create temporary increases in ambient noise levels at any sensitive receptors?</li> <li>Would operation of the proposed treatment facility create a permanent increase in ambient noise levels at any sensitive receptors?</li> </ul>	Section 3.1
<b>Non-native, Invasive and Noxious Weeds</b> <ul style="list-style-type: none"> <li>What effects would the Proposed Action have on the spread and establishment of invasive and non-native species?</li> </ul>	Section 3.1
<b>Rangeland Resources</b> <ul style="list-style-type: none"> <li>What effects would the Proposed Action have on livestock grazing permits, range facilities, and allotment access?</li> </ul>	Section 3.1
<b>Social Values and Economics</b> <ul style="list-style-type: none"> <li>Would the Proposed Action affect employment rates, population counts, or access to community or public services?</li> </ul>	Section 3.11
<b>Special Status Species</b> <ul style="list-style-type: none"> <li>What effects would the Proposed Action have on special status wildlife species and their habitat?</li> <li>Would the Proposed Action remove or disturb special status plants or potential habitat?</li> </ul>	Section 3.1
<b>Visual and Dark Sky Resources</b> <ul style="list-style-type: none"> <li>Would the Proposed Action degrade the existing visual character or quality of the site and its surroundings?</li> <li>Would the Proposed Action conflict with the applicable Visual Resource Management class(es)?</li> <li>Would the Proposed Action create a new source of light or contribute to urban sky glow that would affect dark sky resources?</li> </ul>	Section 3.12
<b>Wastes, Hazardous or Solid</b> <ul style="list-style-type: none"> <li>Would construction or operation of the proposed project release hazardous wastes?</li> <li>Would construction disturb any known recognized environmental concerns, such as underground storage tanks, Resource Conservation and Recovery Act sites, etc.?</li> </ul>	Section 3.1

Scoping Topic and Issue Statement(s)	Section Addressed
<p><b>Water Quality – Surface Water and Groundwater</b></p> <ul style="list-style-type: none"> <li>• How would disposal of effluent affect groundwater quality?</li> <li>• Is there a response plan in place to address accidental rupture of the influent pipeline? If yes, does the plan have a provision to protect groundwater quality?</li> <li>• Is there a response plan in place to address accidental rupture of the influent pipeline? If yes, does the plan have a provision to protect surface water quality?</li> <li>• Would construction surface disturbance cause sediment or chemical loading of surface waters?</li> <li>• Would floodplain inundation cause surface water quality degradation?</li> </ul>	<p style="text-align: center;">Section 3.8</p>
<p><b>Wetlands and Riparian Zones</b></p> <ul style="list-style-type: none"> <li>• Would the proposed project remove or have any effects on riparian habitat/vegetation?</li> <li>• Would the proposed project have any effects on federally protected wetlands, as defined by Section 404 of the Clean Water Act?</li> </ul>	<p style="text-align: center;">Section 3.9</p>

## 2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes in detail the following alternatives:

- **Proposed Action**  
To construct and operate a modernized wastewater treatment facility and irrigation pivots utilizing effluent water; and
- **No Action Alternative**  
Continue to operate the existing treatment facility.

Also included in this section are the alternatives that were considered but eliminated from detailed analysis.

### 2.1 Proposed Action

#### 2.1.1 Project Location and Access

Based on discussions between the EPA, NDEP, and the City of Winnemucca, a new, more efficient effluent disposal facility would be constructed approximately 3.6 miles northwest of the existing facilities on public lands that would be acquired from the BLM through the R&PP. The proposed project is located in T. 36 N., R. 37 E., sections 28 and 32, Mount Diablo Meridian. Section 28 (640 acres) and a portion of section 32 (580 acres) north of an existing railroad track would be patented to the City of Winnemucca, for a total of 1220 acres. Both sections are located approximately 3.6 miles west of the existing facility and are accessible from Jungo Road (Figure 1.2-1). The project area also includes an existing 80-foot-wide ROW, along approximately 2.54 miles of Old Jungo and Jungo Roads, and 0.18 miles of Desert Gem Road, which are presently held by Humboldt County. The influent pipeline is proposed to be placed within this 80-foot ROW, specifically within the existing road surface. The Humboldt County Commissioners have agreed to permit the placement of the influent pipeline within their ROW on Old Jungo, Jungo, and Desert Gem Roads. The portion of the pipeline from the influent pumping station (IPS) to the railroad crossing would be within the City of Winnemucca ROW. In addition, the project area includes a portion of the existing wastewater treatment facility where new infrastructure would be constructed to facilitate operation of the proposed treatment facility. The present wastewater treatment facilities are located in close proximity to the Humboldt River (about 500 feet from the riverbank), northwest of central Winnemucca between I-80 and the Union Pacific Railroad (Figure 1.2-1). The Proposed Action configuration is shown on Figure 2.1-1.

### 2.1.2 Project Description

To respond to the EPA's and NDEP's concerns and be in a position to effectively accommodate current and future wastewater treatment needs of the community, the City of Winnemucca proposes to construct a modernized wastewater treatment facility and effluent reuse pivots and then decommission the existing facility, with the exception of the raw wastewater pipeline (Figure 2.1-1). The City of Winnemucca would demolish the existing headworks building and remove remaining sludge from the treatment lagoons. Sludge would be properly disposed of at the Humboldt County Regional Landfill. Existing dikes would likely remain at the facility.

The new facility would be expected to: be operational by the middle of 2017, support the needs of the City of Winnemucca for at least the next 20 years, and be designed to readily allow for capacity expansion should it be necessary in the future. The components of the proposed project are (Figure 2.1-1):

- New wastewater treatment plant;
- RIBs;
- Groundwater well;
- IPS;
- Influent pipeline;
- Reuse pivots; and
- Groundwater monitoring wells.

The IPS would be constructed at the existing treatment facility and the influent pipeline would convey influent from the IPS to the new treatment facility. The components included within the proposed project are discussed in detail below and follow the natural flow of the system.

#### Influent Pumping Station

Wastewater from the City of Winnemucca's existing collection system (influent) would first enter into a newly constructed IPS. Influent wastewater is composed of a variety of inorganic and organic substances. The characteristics of the influent wastewater that would be pumped to and treated at the proposed plant are presented in Table 2.1-1.

**Table 2.1-1 Influent Characteristics**

<b>Wastewater Constituent</b>	<b>Concentration/Measurement (standard units)</b>	<b>Concentration/Measurement (metric units)</b>
Five-day biochemical oxygen demand (BOD)*	211 parts per million (ppm)	211 milligrams per liter (mg/L)
Total suspended solids	186 ppm	186 mg/L
Ammonia	32.3 ppm	32.3 mg/L
Total Kjeldahl nitrogen	50.2 ppm	50.2 mg/L

<b>Wastewater Constituent</b>	<b>Concentration/Measurement (standard units)</b>	<b>Concentration/Measurement (metric units)</b>
Total phosphorus	5.2 ppm	5.2 mg/L
Alkalinity	305 ppm	305 mg/L
Temperature	17.7 – 90.9 degrees Fahrenheit (°F)	-7.9 – 32.7 degrees Celsius

ppm – parts per million

mg/L – milligrams per liter

\*Large organic molecules are easily decomposed by bacteria in the treatment facility. Oxygen is required for this process of breaking large molecules into smaller molecules and eventually into carbon dioxide and water. The amount of oxygen required for this process is known as the BOD. The five-day BOD, or BOD5, is measured by the quantity of oxygen consumed by microorganisms during a five-day period, and is the most common measure of the amount of biodegradable organic material in, or strength of, wastewater.

The IPS would be located at the existing treatment facility and would be used to move influent to the new facility through an influent pipeline assisted by three pumps. The three pumps would be housed within the IPS building. The IPS would include a float controlled pumping basin, which is a liquid-holding concrete structure that collects liquid flows for pumping to another location. The pumping basin is where influent is stored until adequate volume accumulates to initiate pumping of the influent into the pipeline to the new treatment facility. Without the pumping basin the pumps would have to operate continuously. The IPS would measure approximately 40 feet wide, 20 feet long, and 22 feet deep, for a total size of approximately 17,600 cubic feet (800 square feet footprint). It would extend 2 feet 6 inches above grade. The IPS would be constructed of gray concrete.

An electrical building would be constructed adjacent to the proposed IPS at the existing treatment facility. The electrical building would provide power to the IPS and also house a standby generator to provide emergency power. The building would be constructed of concrete masonry and would measure approximately 32 feet long by 15 feet wide, for a total size of approximately 480 square feet. The gray concrete building would be 12 feet 6 inches in height with a white metal roof.

An additional approximately 30-foot-wide area surrounding the IPS and electrical building may be disturbed during construction. The IPS and all related construction disturbance would be limited to the footprint of the existing treatment facility. No new surface disturbance outside of the existing facility footprint would occur from construction or operation of the IPS and electrical building.

### Influent Pipeline

Influent would be pumped from the IPS approximately 18,460 feet (3.5 miles) through an 18-inch-diameter pipe to the proposed treatment facility in section 28. Polyvinyl chloride (PVC) pipe, high density polyethylene pipe, or ductile iron pipe may be used for the pipeline. The northeast portion (approximately 4,070 linear feet) of the new pipeline, from the IPS to the

Union Pacific Railroad crossing, would be constructed within the perimeter of the existing wastewater treatment facility property (City of Winnemucca ROW). The remaining length of the pipeline would be constructed within Humboldt County's ROW of Desert Gem, Jungo, and Old Jungo Roads.

The influent pipeline would be placed in a trench at a minimum depth of 36 inches below ground surface, measured from the portion of pipe closest to ground surface. The pipe would rest on a minimum of 6 inches of bedding material and be surrounded by at least 12 inches of bedding material on both sides. At least 12 inches of bedding material would be placed on top of the pipe, and native material would be used to backfill the rest of the trench, thereby providing at least 3 feet of cover. The compaction density of the bedding and backfill material would meet requirements of Nevada Standard Details for Public Works Construction.

Construction of the influent pipeline would impact the area within 10 feet on either side of the pipeline trench, in which case the total surface disturbance would be approximately 9.1 acres. The surface disturbance associated with construction of the pipeline would be reclaimed to preconstruction contours, scarified, and seeded for erosion and weed control in disturbance areas outside of existing road surfaces.

#### Treatment Plant

The treatment plant would be located on the north side of Jungo Road, in T. 36 N., R. 37 E., section 28. It would measure approximately 270 feet wide, 460 feet long, for a total of 2.9 acre footprint. Some components of the treatment facility would reach a maximum depth of 22 feet. The tallest portion of the facility, the electrical and operations building, would have a height of 19 feet 2 inches (Figure 2.1-2). Construction of the treatment plant would disturb up to an additional 10 percent of the footprint acreage. Thus, total surface disturbance associated with the treatment plant would be approximately 3.4 acres.

The treatment plant would be designed for an average annual flow rate of 1.5 million gallons per day (mgd). The average volume of flow anticipated to occur on any day during a continuous 30-day period when maximum flow occurs, or average daily maximum month flow, would be 1.95 mgd. Peak dry weather flow would be 2.4 mgd. Peak wet weather flow would be 3.75 mgd.

The effluent discharge requirements of the treatment plant are presented in Table 2.1-2.

**Table 2.1-2 Effluent Discharge Requirements**

<b>Effluent Constituent</b>	<b>Concentration/Measurement (standard units)</b>	<b>Concentration/Measurement (metric units)</b>
Carbonaceous BOD	<30 ppm (30-day average) <45 ppm (daily maximum)	<30 mg/L (30-day average) <45 mg/L (daily maximum)
Total suspended solids	<30 ppm	<30 mg/L
Total nitrogen	<10 ppm (in groundwater)	<10 mg/L (in groundwater)
Nitrate*	<10 ppm	<10 mg/L
pH	6.0 to 9.0	6.0 to 9.0

Source: NDEP Discharge Permit Requirements

\*Monitor and report requirement only.

The treatment plant would consist of the following components (Figure 2.1-2):

- Headworks building;
- Modified Ludzack-Ettinger Bioreactor System (MLEBS);
- Mixed liquor splitter box;
- Secondary clarifiers;
- Scum box;
- Sludge handling building and aerated sludge holding tank;
- Return Activated Sludge Pump Station;
- Electrical and operations building;
- Facility and property boundary fencing and access gate;
- Internal Road; and
- Outdoor facility lighting.

### *Headworks Building*

The headworks building would receive influent pumped from the IPS through the influent pipeline. The function of the headworks is to remove inorganic material such as sticks, stones, plastic, grit, and sand from the influent stream to protect and reduce wear on the other treatment equipment. The inorganic material would be taken to the Humboldt County Regional Landfill for proper disposal. Equipment in the headworks building would include pumps, mechanical screens, screening compactors, grit removal systems, and grit washing systems.

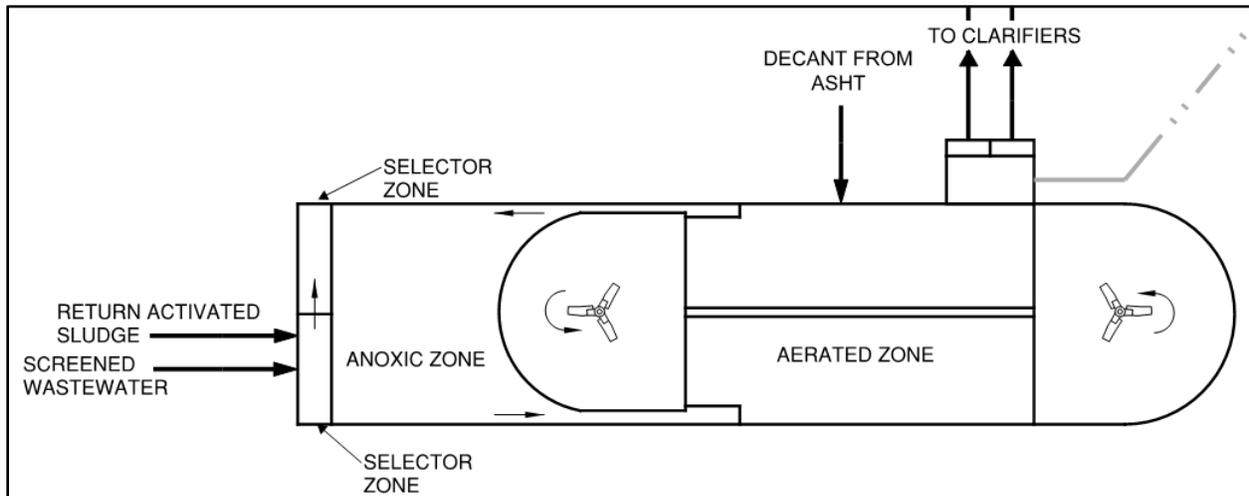
The headworks building would be constructed of concrete masonry with a metal roof. The building would measure approximately 17 feet wide by 74 feet long, for a total footprint of approximately 1,258 square feet. This building would vary between 5 feet deep at the south and 10 feet in depth on the north side, for an average of 9,435 cubic feet. It would have an elevation of 6 inches above grade and would be gray concrete.

### *Modified Ludzack-Ettinger Bioreactor System*

After removal of inorganics at the headworks building, wastewater would continue to the bioreactor for biological treatment. Biological treatment would occur in a series of aerated and non-aerated zones by promoting the growth of microorganisms that consume target wastewater constituents. The microorganism population would be controlled by returning a portion of the waste flow from inside the bioreactor to the anoxic zone and from the clarifiers back to the beginning of the bioreactor (Figure 2.1-3). This return flow from the clarifiers (return activated sludge) promotes a high microorganism population/concentration that results in more efficient consumption of waste products in the wastewater. Aeration would be provided by two surface aerators at either end of the bioreactor “racetrack.” Submerged mixers would maintain microorganisms in suspension in areas with no aeration.

The MLEBS would measure approximately 236 feet wide by 64 feet long, for a total size of approximately 15,104 square feet. This project component would be built at ground level. The MLEBS would have a height of 3 feet 6 inches up to 8 feet 10 inches above grade. The MLEBS would be constructed of gray concrete.

**Figure 2.1-3 Schematic of Modified Ludzack-Ettinger Bioreactor System**



ASHT: Aerated Sludge Holding Tank

### *Mixed Liquor Splitter Box*

The mixed liquor splitter box would be a concrete tank with chambers and gates to separate mixed liquor flows from the bioreactor to secondary clarifiers. The splitter box is the means by which treated water from the bioreactors is conveyed and distributed into the secondary clarifiers. The mixed liquor splitter box would measure approximately 15 feet wide by 15 feet long, for a total size of approximately 225 square feet, and is attached to the MLEBS. It would be 3 feet 6 inches in height, constructed of gray concrete. This project component would be built at ground level.

### *Secondary Clarifiers*

After passing through the MLEBS and splitter box, effluent would enter one of the two secondary clarifiers. The secondary clarifiers separate the biological flocculation and colloidal solids to produce effluent with very low levels of organic material and suspended matter. Each secondary clarifier would have an approximate radius of 34 feet, for a total size of 3,632 square feet (7,264 square feet for both clarifiers). Each would be 3 feet 6 inches in height, constructed of gray concrete.

An effluent box, attached to each secondary clarifier, would allow treated effluent to exit the secondary clarifiers and flow by gravity through a pipeline to the RIBs. Each box would be approximately 5 feet wide, 4 feet long, with a depth of 9 feet, for a total size of 180 cubic feet (360 cubic feet for both).

### *Scum Box*

A scum box, attached to each secondary clarifier, would collect and contain the grease and other floatables on the surface of the effluent in the secondary clarifiers. Scum would then be sent to the solids storage tank, dewatered, and taken to the Humboldt County Regional Landfill. The scum box would measure approximately 6 feet in diameter, for a total size of 113 square feet (226 square feet for both). The scum box would extend 6 inches above grade and be constructed of gray concrete.

### *Sludge Handling Building and Aerated Sludge Holding Tanks*

Sludge, or settled waste product, collected in the secondary clarifiers would be pumped to the bioreactor system by the return activated sludge pumps (defined below) and mixed with influent wastewater to form mixed liquor. This portion of the sludge is referred to as return activated sludge. A portion of the return activated sludge would be diverted to the aerated sludge holding tanks where it would be considered waste activated sludge. The aerated sludge holding tanks would have a storage capacity of 10 days. In the aerated sludge holding tank, oxygen would be introduced and mixed with the waste activated sludge. It would then undergo dewatering with polymer addition to enhance the dewatering process. The polymer used would vary depending on availability but would have the following properties: cationic water-soluble polymer in emulsion, does not have a flashpoint, does not ignite, and is not considered a hazardous waste. The dewatered sludge would eventually be disposed of at the Humboldt County Regional Landfill, where it would be covered at the end of each working day in accordance with Nevada landfill regulations. The Humboldt County Regional Landfill is currently updating their plan of operations to accept this type of material. The City of Winnemucca estimates 5, 8-ton waste disposal bins would be delivered and collected each week.

The sludge handling building, including the two holding tanks, would measure approximately 87 feet wide by 66 feet long, for a total size of approximately 5,742 square feet. The sludge handling building and tanks would be constructed of concrete masonry. It would be 18 feet in height with a painted gray accent stripe (Standard CMU Gray) on the exterior and would have a white metal roof.

#### *Return Activated Sludge Pump Station*

Sludge would be pumped from the bottom of the secondary clarifiers and routed through the sludge handling building to the front of the bioreactor system. A portion of the pumped sludge flow would be diverted to the aerated sludge holding tanks as waste activated sludge. The remainder of the sludge would then be routed to the front of the bioreactor system to mix with influent flow and form mixed liquor. Each Return Activated Pump Station would have a diameter of 8 feet and a depth of 22 feet for a total size of approximately 553 cubic feet (1,106 cubic feet for both). The Return Activated Pump Station would extend 6 inches above grade and be constructed of gray concrete.

#### *Electrical and Operations Building*

The electrical and operations building would contain the electrical infrastructure and equipment necessary for the operation of the various components and pumps of the treatment facility. Daily operations would be monitored and controlled primarily from the electrical and operations building. The electrical and operations building would measure approximately 24 feet wide and 78 feet long, for a total size of approximately 1,872 square feet. The building would be 19 feet 2 inches high, constructed of concrete with a white metal roof. A gray accent stripe (Standard CMU Gray) would be painted on the exterior.

To support the facility operation, a transformer and backup generator would be located outside of the electrical and operations building on concrete pads. The transformer pad is 9 feet long by 8 feet wide for a total size of 72 square feet. The generator pad is 16 feet long by 8 feet wide for a total size of 128 square feet.

#### *Facility and Property Boundary Fencing and Access Gate*

An approximately 8-foot tall chain link security fence topped with barbed wire would surround the entire facility, for a total of 1,460 linear feet, as depicted on Figure 2.1-2. A double swing chain link gate would be installed in-line with the perimeter fence at the entry road of the facility, to allow access for authorized personnel. Three-strand barbed wire fencing would be installed around the perimeter of the RIBs for a total of 6,600 linear feet (Figure 2.1-1). An access gate would also be installed in the RIB perimeter fencing.

### *Internal Roads*

Within the treatment plant, a gravel road would be constructed to access the facility structures. It is estimated that 1,400 tons of gravel, from an existing permitted gravel quarry, would be needed to construct the internal road. The road would have an approximate width of 20 feet and a total footprint of approximately 21,344 square feet (0.49 acres). There would be a small section of pavement south of the sludge handling building, which would measure approximately 2,918 square feet (0.07 acres).

### *Outdoor Facility Lighting*

Outdoor lighting would be installed on facility components for safety and lighting during night-time operation (Figure 2.1-4). Table 2.1-3 presents the relevant information for the outdoor lighting fixtures.

**Table 2.1-3 Light Fixture Specifications for Outdoor Facility Lighting**

Type of Fixture	Lumen Output	Lamp Source Type	Mounting Type and Height	Illuminated Area
Wall Mount	5,337 lumens	LED	Wall – 9 feet	535 square feet
Pole Mount	24,299 lumens	LED	Pole – 12 feet	2,960 square feet

Both wall and pole mounted lighting fixtures would be photocell controlled and operate from dusk to dawn. Photocell controls allow lights to automatically turn on or off depending on the amount of natural light. Wall mounted lights would be installed on the electrical and operations building (three fixtures) and on the sludge handling building/aerated sludge holding tanks (four fixtures) (Figure 2.1-4). These lights would be modified with a visor which provides full-cutoff and ensures that the illumination is directed downward. Pole mounted fixtures would be installed around the bioreactor (four fixtures), on each secondary clarifier (two fixtures), next to the headworks (one fixture), and next to the well (one fixture) (Figure 2.1-4). The pole mounted fixtures would be modified with an upright skirt to ensure no light above 90 degrees. The nearest distance to the property line (R&PP boundary) would be at least 1,900 feet. All of the lights would be visible as point sources from Jungo Road, except for the one on the north side of the Electrical and Operations Building.

### Rapid Infiltration Basins

A RIB is a shallow impoundment that is designed to allow treated water to infiltrate into the soil substrate. Treated effluent would flow by gravity from the treatment facility through a pipeline to a series of RIBs located south of Jungo Road, across from the treatment facility. The pipeline would be constructed of 18 inch diameter PVC pipe and would be installed below Jungo Road. Each RIB is designed to accommodate infiltration of the expected peak flow of 3.75 mgd. A double-ring infiltrometer test was conducted by Pezonella Associates, Inc. (Pezonella) in February 2015 to determine the infiltration rate within the area of the proposed RIBs. The

infiltration rate of the RIBs was estimated to average 0.04175 inches per minute (in/min) at a depth of 4 inches, 0.967 in/min at a depth of 9 feet, and 3.533 in/min at a depth of 14 feet (Pezonella, 2015). Boring indicated that the top several feet of the RIBs are classified as having a silty sand texture, some with gravels (Pezonella, 2015).

Although dredging of the RIBs is not necessary for continued use, the City of Winnemucca would need to rip the soil surface of the RIBs on an annual or biennial basis to maintain adequate infiltration; which allows for their use in perpetuity. Natural attenuation including filtration, adsorption, and precipitation, would occur as the effluent moves through the soil matrix in the RIBs. Refer to Table 2.1-2 for effluent discharge requirements regarding total dissolved solids, nitrates, and carbonaceous biological oxygen demand. As effluent percolates through the soil it would eventually flow into and recharge native groundwater aquifers. Groundwater monitoring wells would be required and installed as follows: two down-gradient and one up-gradient from the treatment facility. Exact well locations would be determined in cooperation with NDEP and monitoring of the wells would be conducted in accordance with NDEP requirements.

Each RIB would measure approximately 300 feet wide by 1,200 feet long. The existing grade would be adjusted to provide a slight downgradient slope from north to south within the RIBs; as such, some areas of the RIBs would be cut while others are filled. A perimeter berm would surround each shallow basin, separating one RIB from the adjacent RIBs. The berms would measure approximately 46 feet across and approximately 6 feet high, measured from the surface of the basin. The perimeter berm would be hydroseeded after construction. The RIBs are designed for 3 feet maximum water depth. The City of Winnemucca does not anticipate ponding in the RIBs due to the high infiltration rates (described above). If ponding becomes an issue, the City of Winnemucca would rip/scarify the surface of the RIBs more frequently than once per annum. The berms are designed to maintain separation between storm water and the effluent; therefore, major storm events should not influence the function of the RIBs.

The project would initially include the construction and operation of six RIBs. The project area is sufficient in size to accommodate an additional 10 RIBs, that may be constructed in the future as need and demand dictates. The additional RIBs would be constructed adjacent and to the east or west of the initial six RIBs, as shown on Figure 2.1-1. Construction disturbance required for the RIBs would extend up to 100 feet from the outside edge of the perimeter berm. Construction of the initial six RIBs would result in approximately 52.9 acres of surface disturbance. The additional 10 RIBs constructed at a later date would result in an additional 86 acres of surface disturbance, for a total of 138.9 acres. See Table 2.1-4 for a synopsis of temporary and permanent surface disturbance.

### Reuse Pivots

Although the RIBs described above are designed to handle peak effluent flow, the City of Winnemucca proposes to construct up to four pivots for effluent reuse in the future. This feature may reduce the number of RIBs necessary for effluent disposal in the future. The residual nutrients that may be present in the effluent would facilitate agricultural production.

Three pivots would be constructed in T. 36 N., R. 37 E., section 32 and one pivot would be located in T. 36 N., R. 37 E., section 28, northwest of the proposed treatment facility. Each of the three pivots in section 32 would have a radius of approximately 1,055 feet, and would measure approximately 81 acres in size (243 acres for three pivots). The pivot in section 28 would have a radius of approximately 1,725 feet, and would measure approximately 227 acres in size.

The presence of nitrates in the water is not anticipated to be a concern. Using the pivots to irrigate planted alfalfa would effectively reduce the amount of nitrates going from the effluent into the soil. Alfalfa has long been recognized for its ability to utilize nitrates of this nature. Treated effluent would be used in the pivots during the seven month alfalfa growing season (April through October). The pivot irrigation would typically utilize all of the effluent discharge generated during the growing season. Pivot irrigation would require the addition of well water to the effluent to minimize the potential for salt accumulation in the soil. The addition of well water would also dilute any remaining metals in the effluent. The City of Winnemucca would submit an application to the NDWR to shift the point of diversion for a portion of their existing appropriated groundwater rights to new well site(s), as necessary. During the remaining five months (November to March), effluent would be disposed of in the RIBs. The RIBs would also be used in combination with the reuse pivots during the non-winter months when the pivot irrigation does not consume the full amount of water discharged by the treatment plant. The application of effluent and well water in the pivots would be from the near-canopy method (i.e., nozzles would be mounted just above the maximum height of alfalfa crops, or approximately 3 feet). The combination of a center pivot system with near-canopy rotator sprinklers would provide high application efficiency, in the range of 70 to 95 percent.

### Groundwater Well

The project includes drilling a new groundwater well for operation of the treatment facility. The groundwater would typically be used for washing down the treatment facility and for the office toiletries and the treatment plant lab. The well would most likely have an 8-inch casing and would be drilled to a depth of approximately 200 feet below ground surface. The size and depth of the casing would be finalized during project design. The location of the well is shown on Figure 2.1-2, directly south of the operations building. The City of Winnemucca is in the process of submitting an application to the NDWR to shift the point of diversion for 200 gallons per minute (gpm) of their existing appropriated groundwater rights to the new well site.

All drilling related impacts would be restricted to an approximately 50-foot radius surrounding the well. The well would be drilled by a licensed Nevada driller and constructed in conformance with federal and state regulations, including being fitted with required casings, equipped with submersible electric pump, capped, and locked. The well would yield an estimated 1,000 gpm or approximately 1,600 acre-feet per year. Regardless of the disposal method, the treatment plant would require 50 to 75 gpm (instantaneous flows would be higher than average flows) or approximately 80 to 120 acre-feet per year, which is substantially less than the well capacity.

### Waste Disposal

No industrial waste is currently accepted at the existing wastewater treatment facility. This reduces the likelihood of excess heavy metals and other potentially hazardous wastes being received at the facility. There are no plans to accept industrial waste at the new facility.

Presently, solid wastes (plastic, rags, wood, etc.) that collect on racks at the influent sewage/pump station are hauled to the Humboldt County Regional Landfill. This amounts to about 10 gallons per day. During operation, the new treatment facility would produce waste activated sludge which would be disposed at the Humboldt County Regional Landfill. The sludge would be deposited at the described special handling location at the landfill, which is separate from the regular trash. The City of Winnemucca estimates five 8-ton waste disposal bins would be delivered and collected each week. It would be covered at the end of each working day in accordance with Nevada landfill regulations (NAC 444.646 and NRS 444.560).

NAC 444.646 - Disposal of special wastes: Sewage sludge, septic tank pumpings and medical wastes; coverage of burial area. (NRS 444.560)

- 1) Sewage sludges, septic tank pumpings, and medical wastes may be deposited at a disposal site only if provisions for such disposal are included in the operational plan and approved by the solid waste management authority.
- 2) A completed special waste burial area must be covered with a layer of suitable cover material compacted to a minimum uniform depth of 36 inches.

Sludge would be disposed of by land application in the soil borrow area at the landfill, which is located in the drainage basin adjacent to, and physically separated from, the active disposal area (NDEP, 2014). Public access would be discouraged from the area with signs stating that only authorized vehicles are allowed. Warning signs would also be posted around the perimeter of the land application area. The signs would note the nature of the wastes which could potentially be present that the wastes could be harmful to public health, and that only authorized personnel are allowed in the area.

### 2.1.3 Construction Activities

#### *Influent Pumping Station and Electrical Building*

All construction disturbance at the existing treatment facility would be limited to the current and existing footprint of the facilities. No new surface disturbance would occur outside of the existing footprint. Installation of the IPS and electrical building would permanently disturb 0.04 acres with temporary disturbance of 0.08 acres.

#### *Influent Pipeline*

The influent pipeline would be installed using conventional open-cut trenching for depths of 10 feet or less. In general, the cover over the top of the pipe would range from 3 to 10 feet depending on the topography. Minimum depth of cover would be maintained at 3 feet without other protection such as concrete encasement. The compaction density of the cover and backfill material would meet requirements of Nevada Standard Details for Public Works Construction and Humboldt County standards. During construction, the pipeline trench would be temporarily “closed” at the end of each work day either by covering with steel plates or backfill material, or installing fences to restrict access.

Construction of the proposed influent pipeline would potentially impact the area within 10 feet on either side of the pipeline trench, in which case the total surface disturbance would be approximately 9.7 acres. Disturbance would be expected to occur primarily in areas immediately adjacent to the trench. The existing treatment facility as well as wide roadway shoulders would provide space for construction staging areas used to stage pipe and stock aggregates and other pipeline supplies, construction equipment, and vehicles. The proposed treatment plant site may also be used as a temporary construction staging area.

A backhoe, excavator, or other appropriate equipment would be used to dig trenches for the pipeline. In most locations, a safe excavation slope of trench sidewalls would be used which is adequately stable except in areas where the soil cover is greater than 5 feet and/or where rock is unusually fractured or contains adverse dipping planes. In these areas, shoring would be required to offer temporary support per Occupational Safety and Health Administration regulations. Soil excavated from the trenches, would be stockpiled alongside the trench or in staging areas for later reuse for backfilling the trench and appropriately covered or protected from wind and rain events. Construction of the influent pipeline is expected to take 6 to 8 months.

#### *Treatment Plant, Rapid Infiltration Basins, and Reuse Pivots*

The initial construction activity would include general site preparation which involves site clearing and grubbing, staking, and rough grading, followed by excavation. Excavation would include bringing the site to final grade, preparing trenches for underground piping and utilities, and completing surface work for structural facilities, including compacting of soils in preparation

for erecting the structural facilities, such as the operations building. After installation of yard piping and utilities, building foundations would be formed and placed, and building walls and roofing would be erected. In conjunction with building construction, tanks and basins would be constructed. As the structures are erected, the electrical equipment, mechanical process equipment, instrumentation, and lighting would be installed.

When all components of the treatment plant are fully constructed, testing of each component would take place. Once testing is satisfactory, startup of the treatment plant would follow. Final placement of gravel would take place after most of the heavy equipment, at least non-rubberized equipment, is offsite, and architectural finishes and landscaping can be installed. All construction activities and staging areas associated with the treatment plant would be located within the site boundaries.

#### 2.1.4 Construction-Related Ground Disturbance

Temporary ground disturbance would occur around the perimeter of the treatment plant, RIBs, IPS, groundwater wells, and other components of the project during construction. Table 2.1-4 presents the approximate temporary and permanent ground disturbance associated with each project component.

**Table 2.1-4 Proposed Surface Disturbance**

<b>Proposed Project Component</b>	<b>Permanent Surface Disturbance (Approximate)</b>	<b>Temporary Surface Disturbance (Approximate)</b>
<b>Public Lands Administered by the BLM Humboldt River Field Office</b>		
Wastewater Treatment Plant	2.9 acres	0.3 acres
Reuse Pivots	470 acres	32 acres
RIBs	52.9 acres for initial six RIBs 138.9 acres for full build out (16 RIBs)	5.2 acres for initial six RIBs 14.1 acres for full build out (16 RIBs)
<b><i>Total on Public Land</i></b>	<b><i>611.8 acres</i></b>	<b><i>46.4 acres</i></b>
<b>Private Land, Existing Rights-of-Way, and Existing Treatment Facility</b>		
IPS and Electrical Building	0.04 acres	0.08 acres
Influent Pipeline	None	9.7 acres
<b><i>Total on Private Land</i></b>	<b><i>0.04 acres</i></b>	<b><i>9.78 acres</i></b>
<b>Total on All Land</b>	<b>611.84 acres</b>	<b>56.18 acres</b>

#### 2.1.5 Construction Schedule and Workforce

It is anticipated that construction would begin in approximately April 2016. Construction of the project would require 10 to 15 personnel onsite, but may have as many as 40 to 50 people on rare occasions. The construction personnel would likely work as several small, individual crews to construct the various components of the proposed project. Personnel would be present and perform construction Monday through Friday, between sunrise and sunset. Construction would

be completed within 14 months of commencement, depending on weather and staffing. Construction on weekends could occur infrequently, if needed to meet the project deadline.

#### 2.1.6 Construction Equipment

Construction equipment and vehicles that may be necessary are listed in Table 2.1-5. Use of equipment is dependent on site-specific conditions encountered. Likewise, Table 2.1-5 does not list various power and hand tools that would likely be used for construction of the project, such as hammers, sanders, wire cutters, and shovels.

**Table 2.1-5 Proposed Construction Equipment**

Equipment	Expected Number in Use	Uses
Scraper	3-4	Grading, grubbing vegetation
Excavator	1-3	Excavation, trenching, grubbing vegetation
Crane	1	Structure placement, unloading materials
Concrete pumper	1	Concrete installation
Road grader	1-2	Grading, grubbing vegetation
Backhoe	2-3	Excavation, trenching, grubbing vegetation
Compactor	1-2	Compacting site
Dump truck	2-4	Moving aggregate and materials
Water truck	1-2	Suppressing dust
Concrete truck	5-6	Pouring concrete
Semi-truck	1-2	Delivering materials

#### 2.1.7 Construction Reclamation

The City of Winnemucca would implement reclamation of the project area following completion of construction of the project. All areas temporarily disturbed during construction would be graded to match preconstruction contours to the extent feasible. Areas where restoration of preconstruction contours is not feasible would be restored with contours similar to those of surrounding landforms. After site grading and preparation is completed, the surfaces would be seeded with a certified weed-free seed mix approved by the BLM. Seeding would not be performed in areas where vegetation was absent prior to commencement of the project, such as existing roads that are disturbed during construction. Roads disturbed by construction would be returned to their preconstruction conditions. Invasive, non-native and noxious weeds would be controlled in accordance with BLM guidelines.

Reclamation would include removal of all project equipment and supplies from the project area. A cleaning and housekeeping program would be implemented throughout construction. The City of Winnemucca and their contractors would maintain a clear, debris-free work area throughout construction of the proposed project.

Reclamation practices would be guided by the Nevada Guidelines for Reclamation (Nevada State Clearinghouse, 1998). The BLM may provide additional reclamation guidance or direction during reclamation to improve success.

#### 2.1.8 Operation and Maintenance

The City of Winnemucca would continue to operate the existing wastewater treatment facility during construction of the new facility. Once the IPS, treatment facility, influent pipeline, and the first six RIBs are constructed, wastewater treatment activities would shift from the existing facility to the new facility. The new treatment facility would be operated continuously for the life of the project. Up to five people would be present during daily operations. Overnight operations would require fewer personnel to be present.

The RIBs would be used for effluent disposal throughout the initial operation of the project. As needed, the reuse pivots would be constructed and operated during spring, summer, and fall months. The RIBs may also be used concurrently with the disposal pivots during these months.

Following construction of the proposed project, the remaining existing facilities and the new treatment facility would be operated by the City of Winnemucca and maintained as needed by the City of Winnemucca and/or its contractors. The City of Winnemucca would routinely monitor the operation, structural soundness, and overall function of the new treatment facility as preventive maintenance and to identify system components in need of repair. Regular monitoring (including the groundwater wells), inspection, and repairs would ensure the integrity of the facility.

#### 2.1.9 Environmental Protection Measures

The following provides a description of the environmental protection measures (EPM) that the City of Winnemucca has incorporated into the proposed project to reduce, or eliminate potential impacts of the proposed project. These measures would be implemented by the City of Winnemucca and/or its contractors.

##### *Solid and Hazardous Wastes*

- All construction, operation, and maintenance activities would comply with applicable federal, state, and local laws and regulations pertinent to the use of hazardous substances. The construction or maintenance crew foreman would be responsible for maintaining compliance with all applicable laws and regulations.
- The City of Winnemucca and its contractors would exercise standard procedures for refueling heavy equipment that is kept at the project for long periods of time during construction, such as blades, cats, drill rigs, etc. This equipment would be refueled in place at the project. No personal or light duty vehicles would be refueled at the project site.

- Totally enclosed containment would be provided for any trash stored on site. Spill kits would be stored onsite during construction and maintenance activities, and be made readily available to all personnel. Absorbent mats and pads would be immediately placed under any equipment observed to have a fluid leak to prevent possible ground contamination.
- In accordance with state regulations, any spills must be reported to NDEP if the material spilled exceeds the reportable quantity designated for that material. Per NAC 445A.347, the reportable quantity for petroleum products (e.g., gasoline, diesel, motor oil, hydraulic fluid, etc.) is 25 gallons or any quantity if petroleum spills on or in waterways. Notification would be provided to the NDEP within one working day of the spill event via their Spill Reporting Hotline at 888-331-6337.
- Portable sanitary facilities would be available and used by all personnel during construction activities. These facilities would be serviced by a local contractor, and human waste would be disposed of at an approved facility. Sanitary facilities would be removed at the site when construction is completed.
- All construction waste, including trash and litter, garbage or solid waste, biodegradable debris, petroleum products, and other materials would be removed from the project site to an authorized disposal facility. No wastes or surplus construction materials would be left at the project site.
- No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.

#### *Air Quality and Dust Control*

- All requirements of those entities having jurisdiction over air quality matter would be adhered to and any permits needed for construction activities would be obtained. Open burning of construction trash and project wastes would not be permissible.
- Access to work areas would be by existing roads whenever possible to minimize temporary disturbance from grading. Overland travel would be used only as necessary to efficiently complete construction activities.
- Prudent speeds would be observed while operating vehicles and equipment on the project site to prevent excessive amounts of fugitive dust emissions.
- The City of Winnemucca would use dust abatement techniques, such as watering unpaved surfaces where vegetation cover is removed, as needed to reduce to fugitive dust emissions.
- The City of Winnemucca would restrict equipment and vehicle idling times to 15 minutes during construction activities.

### *Cultural Resources*

- The City of Winnemucca would limit vehicle and equipment travel and construction activities to the project area. Prior to construction, project personnel would be instructed on the protection of cultural and archaeological resources.
- Any discovery of cultural resources, items of cultural patrimony, sacred objects, or funerary items would require that all activity in the vicinity of the find ceases, and the Field Manager of the BLM Humboldt River Field Office be notified immediately by phone, with written confirmation to follow. The location of the find would not be publicly disclosed, and any human remains must be secured and preserved in place until a Notice to Proceed is issued by the authorized officer.

### *Soils, Erosion, and Water Quality*

- The City of Winnemucca and its contractors would use existing roads for construction access whenever possible to minimize soil disturbance. Disturbance to vegetation within the project area would be minimized to the extent feasible by performing as much construction as possible within existing roadways. Existing roads would be left in (or restored to) a condition equal to their pre-construction condition. Areas of existing vegetation that are temporarily disturbed during construction would be reseeded using a BLM-approved, certified weed-free seed mix.
- Topsoil would be salvaged and reused whenever possible and in a timely manner in areas of temporary disturbance during reclamation.
- The City of Winnemucca and its contractors would use dust abatement techniques as needed to minimize wind erosion of soils.
- The City of Winnemucca and its contractors would adhere to best management practices described in the *Wastewater Treatment Facility Improvements Preliminary Storm Water Pollution Prevention Plan* (Stantec, 2015c).

### *Wildlife*

- Trash and other waste products that may attract wildlife would be properly managed and collected in secured bins or containers while at the project site. All trash and other wastes would be removed from the project area and disposed of at an authorized facility.
- Project equipment and vehicles would be operated at prudent speeds to prevent potential collisions with wildlife crossing or standing within existing roadways or the project area. If wildlife is encountered while operating vehicles or equipment, operators would yield to the wildlife.
- Personnel would be strictly prohibited from carrying firearms on the project site to discourage illegal hunting and harassment of wildlife.

- Reclamation of the areas temporarily disturbed from construction activities would be completed in order to return these areas to the pre-construction condition, thereby restoring wildlife habitat provided in these areas prior to construction.
- Project activities disturbing potential migratory bird nesting habitat (i.e., vegetation cover) would be timed to occur outside the bird nesting season (March 1 to August 31). When habitat disturbance during the nesting season is unavoidable, the habitat would be surveyed for nesting birds, no less than 3 days and no more than 10 days prior to any surface disturbance. If nesting birds are found, areas within a 260-foot radius of the nest site would be buffered from disturbance until the young have fledged the nest.

#### *Noxious Weeds and Invasive Species*

- Parts of the project area disturbed during construction would be reseeded with a BLM-approved, erosion-control seed mix. Only certified weed-free hay would be used if hay bales are used for erosion control.
- Areas that become infested with invasive species/noxious weeds during construction would be mapped and treated using a BLM-approved herbicide. Areas may also be seeded with a certified weed-free seed mix and mulching materials, in coordination with the BLM Humboldt River Field Office.
- The City of Winnemucca would implement a weed management plan for noxious weeds during construction of the proposed project through successful establishment of reclamation vegetation.

#### *Grazing and Rangelands*

- If existing fences and gates are damaged or destroyed by construction activities, they would be repaired or replaced to their original condition prior to construction, as required by the landowner or the land management agency. Temporary gates would be installed only with the permission of the landowner or the land management agency.
- The City of Winnemucca would provide cattle drive easements to the grazing permit holder along the exterior borders of T. 36 N., R. 37 E., sections 28 and 32.

#### *Dark Sky Resources*

- Construction lighting, including equipment lights and any temporary auxiliary lights would be limited to those required to safely conduct the construction activities and would be shielded and/or directed in a manner that focuses direct light to the immediate work area.
- Any permanent exterior lighting fixtures at the proposed treatment plant would have screens that do not allow the bulb to shine up or out (i.e., hooded and shielded or located within the soffit). Lighting would be located to avoid light pollution onto adjacent lands as viewed from a distance. Lighting would specifically be directed towards the ground or surface intended to be illuminated.

## Noise

- All pumps or structures housing pumps would be fitted with sound-attenuating materials.

## 2.2 No Action Alternative

The existing facility would remain operational at its current location within the 100-year floodplain of the Humboldt River. The existing facility, shown on Figure 2.2-1, receives wastewater at the headworks where influent is screened and pumped into treatment lagoons. The treatment lagoons are aerated and mixed to treat wastewater. Treated wastewater is discharged to adjacent RIBs. The City of Winnemucca would continue to operate in noncompliance with the EPA, resulting in the City of Winnemucca being monetarily fined by the EPA.

## 2.3 Alternatives Considered but Not Analyzed in Detail

### 2.3.1 Wetland Construction Alternative

A wetland for disposal of the treated effluent was considered. The City is being required by the EPA and NDEP to remove all of the existing sewage facilities from the Humboldt River floodplain. The criteria for constructing a viable wetland is based on having soils inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Based on the topography and soil types of the area, the only viable soils for the creation of wetlands are found within the Humboldt River floodplain.

### 2.3.2 Private Lands Alternative

Under the Private Lands Alternative, the City of Winnemucca would pay full market value for private lands to construct the treatment facility. This alternative was not analyzed in detail due to the lack of available private property of adequate size in proximity. Additionally, the estimated cost to construct the new facility with purchase of private lands would create social and economic consequences on the City of Winnemucca and its residents.

## 2.4 Conformance with Land Use Plans

The *Winnemucca District Resource Management Plan (RMP) and Final Environmental Impact Statement, May 2015* (BLM, 2015a), as amended by the *Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah, September 21, 2015* (BLM, 2015b). The RMP Amendment (BLM, 2015b), provides a list of public lands that are suitable for disposal or exchange. The public lands that the City of Winnemucca has submitted an application to acquire for the construction and operation of the proposed project are included on this list.

The Proposed Action and other alternatives analyzed in detail are in conformance with the Winnemucca District RMP in Objective LR 2 and more specifically in Action LR 2.7 (BLM, 2015a).

- Objective LR 2: Make available for disposal (through sale or exchange) those public lands where disposal provides for public benefit, public lands that have little or no resource value and that consolidates BLM land patterns to ensure effective administration, improve resource management and promote community development. Access to other public lands will be reserved to the US, if appropriate.
- Action LR 2.7: Those lands that are leased to local and state governmental entities or nonprofit agencies through the R&PP may be disposed of to that governmental or nonprofit entity without meeting all of the criteria set forth in the RMP if the disposal of the R&PP leased lands is in the interest of the public (e.g., if the land is a landfill, shooting range, or other hazmat site).

## **2.5 Relationship to Laws, Regulations, and Other Plans**

The Department of Interior regulations for R&PP's are found in 43 CFR § 2740 and 43 CFR § 2912. The R&PP authorizes the sale or lease of public lands for recreational or public purposes to State and local governments, as well as qualified nonprofit organizations. The act applies to all public lands identified for disposal within existing land use plans. Due to the fact that this application is for a municipal wastewater treatment plant, the sale, lease, or reverter clause does not apply. This application would go straight to patent.

### 3.0 AFFECTED ENVIRONMENT

#### 3.1 Supplemental Authorities and Additional Resources

The BLM is required to consider specific elements of the human environment that are subject to requirements specified in statute or regulation or by executive order. Table 3.1-1 outlines the elements that must be considered in all environmental analyses. Table 3.1-2 presents additional important resources deemed necessary for evaluation by the BLM. In these tables, marking a resource as “Present/Not Affected” does not necessarily mean that no impacts would occur to that resource, but rather, that impacts to the resource are not expected to be substantial enough to require detailed analysis.

**Table 3.1-1 List of Supplemental Authorities**

Supplemental Authorities	Not Present	Present but Not Affected	Present and Affected	Rationale/Comments
Air Quality			✓	See discussion in Section 3.3.
Areas of Critical Environmental Concern	✓			There are no Areas of Critical Environmental Concern in or near the project area.
Cultural Resources (Including NHT)	✓ NHT	✓ Cultural Resources		A Class III Cultural Resources Inventory has been completed. No adverse direct or indirect physical, visual, audible, or atmospheric effects to historic properties listed or eligible for inclusion in the National Register of Historic Places are anticipated with this project.  No adverse direct or indirect physical, visual, audible, or atmospheric effects to historic trails are anticipated with this project.
Environmental Justice			✓	See discussion in Section 3.4.
Farmlands Prime or Unique	✓			No prime or unique farmlands are present within the project area.
Floodplains			✓	See discussion in Section 3.5.
Human Health and Safety			✓	See discussion in Section 3.6.
Migratory Birds			✓	See discussion in Section 3.7.
Native American Religious Concerns		✓		Government to government consultation was conducted with the Fort McDermitt Paiute and Shoshone Tribe on April 20, 2015. Letters introducing the proposal and inviting consultation were sent to the following tribes: Winnemucca Indian Colony, Battle Mountain Band, and Lovelock Paiute Tribe on June 8, 2015. No issues have been identified to date based on the consultation meeting and letters.

Supplemental Authorities	Not Present	Present but Not Affected	Present and Affected	Rationale/Comments
Noxious Weeds/Invasive Non-Native Species		✓		<p>The concerns relative to the introduction and spread of invasive species are deemed inconsequential with respect to transference of the land under the Proposed Action. No treatment of invasive species is required prior to transference in the case of this site.</p> <p>Based on a BLM field visit (July 2015) involving a species evaluation, it was determined that there are no Nevada Department of Agriculture-listed noxious species on or near the proposed project site.</p> <p>The invasive species found in the area consist of cheatgrass (<i>Bromus tectorum</i>) and Russian thistle (<i>Salsola tragus</i>). Both are common to this area and present no threat as invasive species.</p>
Threatened and Endangered Species	✓			Based on the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation Trust Resource Report generated for the project location, there are no Threatened or Endangered species or critical habitat present.
Wastes, Hazardous or Solid		✓		<p>Pezonella performed a Phase I Environmental Site Assessment (ESA) of the R&amp;PP area in 2014, in accordance with the requirements of ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessments Process, E 1527-13. According to Pezonella (2014), there is no evidence of recognized environmental conditions in connection with the assessment area.</p> <p>Solid waste is disposed of at the Humboldt County Landfill, which is also permitted to handle sludge.</p>
Water Quality (Surface and Ground)		✓ Surface Water	✓ Groundwater	<p>Based on required design measures no impacts to surface water are expected.</p> <p>See discussion in Section 3.8 for Groundwater.</p>
Wetlands and Riparian Zones			✓	See discussion in Section 3.9.
Wild and Scenic Rivers	✓			There are no rivers designated as wild and scenic in or near the project area.
Wilderness	✓			There are no wilderness areas in or near the project area.

**Table 3.1-2 Additional Resources**

<b>Additional Resources</b>	<b>Not Present</b>	<b>Present but Not Affected</b>	<b>Present and Affected</b>	<b>Rationale/Comments</b>
Fish Habitat	✓			Resource is not present.
General Wildlife		✓		Based on the type of project and habitat conditions at the location, there are no issues of concern with regard to this resource.
Lands and Realty			✓	See discussion in Section 3.10.
Lands with Wilderness Characteristics	✓			The Proposed Action is located in wilderness inventory unit NV-020-234 and NV-020-644. Wilderness characteristics for these units were reviewed. Historical inventories had determined these areas did not qualify for further inventory and should be dropped from the wilderness review process. Current reviews concurred that the areas do not meet the criteria for Lands with Wilderness Characteristics. No further analysis is recommended.
Minerals		✓		Based on site visits and mineral report dated November 18, 2015, it is concluded that all lands under consideration for the R&PP have low potential for locatable, leasable, and salable minerals.
Noise		✓		Sound attenuation measures are incorporated into the design and construction documents so the plant operating noise levels fall within the Noise Control Act of 1972 which establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Based on the design and nature of this project, BLM does not anticipate noise impacts to be an issue and therefore no further analysis is necessary.
Paleontology	✓			The project falls within an area identified as having a Potential Fossil Yield Classification of 3 (moderate). The Quaternary alluvium deposits are judged unlikely to produce significant or scientifically important fossils. No known fossil find localities are located within one mile of the project area. Per BLM IM 2009-011, no further environmental analysis is necessary.
Rangeland Resources		✓		Animal Unit Months would not be impacted and impacts to range improvements would not be expected. The Proposed Action was modified by the City of Winnemucca to address the permittee's initial concerns involving day to day livestock operations.
Recreation		✓		The public's use of the area for dispersed recreation is not expected to be impacted.

Additional Resources	Not Present	Present but Not Affected	Present and Affected	Rationale/Comments
Social and Economic Values			✓	See discussion in Section 3.11.
Soils		✓		See Section 3.2 for general setting information with respect to soils.
Vegetation		✓		See Section 3.2 for general setting information with respect to vegetation.
Special Status Species	✓			<p>Desktop analysis of Geographic Information Systems (GIS) data, specifically the 2015 greater sage-grouse (<i>Centrocercus urophasianus</i>) habitat layer, indicated that no portion of the project area was mapped as greater sage-grouse habitat. A follow-up field visit by the BLM biologist confirmed that greater sage-grouse habitat was not present within the project area. BLM required surveys to be conducted for migratory birds (includes several special status species), pygmy rabbit (<i>Brachylagus idahoensis</i>), and numerous special status plant species. Field surveys indicated no pygmy rabbit or Western burrowing owl (<i>Athene cucicularia</i>) presence within the R&amp;PP boundary (Stantec, 2015b).</p> <p>A field visit was conducted to assess the habitat in the assessment area to determine whether it would be suitable to support any of the special status plant species. Based on the field visit, it was determined there is some potential for Tonopah milkvetch (<i>Astragalus pseudodanthus</i>) and oryctes (<i>Oryctes nevadensis</i>) to occur within section 32 and the portion of section 28 south of Jungo Road (Appendix A). The habitat is of marginal quality due to the extensive cover by annual weeds.</p>
Visual Resources			✓	See discussion in Section 3.12.
Water Quantity		✓		Based on proposed water usage and the water source not changing, water quantity is not expected to be impacted.

### 3.2 General Setting

For the purpose of analysis, the project area includes section 28 in its entirety, the area north of the railroad in section 32, the influent pipeline corridor, and the existing wastewater treatment facility. For some resources as noted within their individual sections, the analysis is focused on solely the R&PP boundary, which includes section 28 and the portion of section 32 north of the railroad; herein referred to as the R&PP boundary.

The project area is located in the Basin and Range physiographic province which is characterized by long, narrow, and roughly parallel mountain ranges that are separated by deep valleys. The project area is located in a valley in the south central portion of Humboldt County. The public land in the vicinity of the project area is checkerboard interspersed with private land. The elevation ranges from 4,280 feet above mean sea level (AMSL) at the existing wastewater treatment facility to 4,470 feet AMSL in the northeast portion of the R&PP boundary. Climate in the area is classified as semi-arid with the majority of precipitation falling between October and June as a result of Pacific storms. Annual precipitation averages 8.3 inches. Diurnal and seasonal temperature variation is substantial with warm days followed by cool nights. Temperatures range from lows around 17 °F to highs of around 93 °F (U.S. Climate Data, 2015).

The soils in the project area are classified by the Natural Resource Conservation Service. They are dominated by the Goldrun-Kleck-Davey complex and Connel very fine sandy loam. There are also small areas of the McConnel-Shabliss association, Sonoma silt loam, Rose Creek loam, Goldrun-Preble complex, Preble very fine sandy loam, Orovada-Bliss association, and Humboldt silty clay loam (NRCS, 2015). The majority of the soils in the project area are well-drained with no frequency of flooding or ponding (NRCS, 2015).

There are three general vegetation communities present within the project area: 1) Annual Grasses, 457 acres; 2) Dunes with Annual Grasses and Invasive Weeds, 750 acres; and, 3) Basin Big Sagebrush, 16 acres (Appendix B). The Dunes with Annual Grasses and Invasive Weeds community occurs within the portion of the project area in sections 28 and 32 south of Jungo Road. This community is characterized by sandy soils with stabilized sand dunes dominated by cheatgrass and Russian thistle. The crests and sides of the stabilized dunes support yellow rabbitbrush and basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). The dominant vegetation communities within the project area are likely the result of the 1985 fire which burned the vast majority of sections 28 and 32. Currently, the Basin Big Sagebrush community covers less than two percent of the project area (Stantec, 2015b). The species observed within the project area during the 2015 survey are presented in Appendix A.

### **3.3 Air Quality**

The affected area for air quality, including greenhouse gas (GHG) emissions, consists of the project area and the surrounding land within 12,000 feet of the project area. This area is sufficient to capture potential impacts of a project of this nature in correlation to ambient air quality. Air dispersion modeling typically focuses on near field impacts for non-major sources, sources that are not regulated under the prevention of significant deterioration program.

The U.S. EPA Office of Air Quality Planning and Standards and the NDEP have set ambient air quality standards for the following criteria pollutants: nitrogen dioxide, sulfur dioxide, carbon

monoxide, particulate matter smaller than 2.5 and 10 microns in aerodynamic diameter, ozone, and lead. The NDEP has also established ambient air quality standards for hydrogen sulfide. Minimum ambient air quality standards are provided in NAC 445B.22097.

Attainment is achieved when existing concentrations of criteria air pollutants in an area are less than the maximum allowable concentrations specified in the ambient air quality standards. Attainment areas correspond to hydrographic areas in Nevada. The assessment area is located in the Winnemucca Segment Hydrographic Area, Hydrographic Area 70 of the Humboldt River Basin. Existing contributors of air pollutants in the assessment area include fugitive dust from vehicle traffic on gravel and dirt roads, train emissions on railroads, agricultural practices, and vehicle emissions on I-80 and other local roads. The assessment area is in attainment for all criteria air pollutants (EPA, 2016).

### **3.4 Environmental Justice**

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA, 2015b).

The affected environment for environmental justice consists of the Census Blocks and Block Groups that the proposed project would be located within or adjacent to. Census Blocks were used specifically for identifying minority populations because U.S. Census Bureau data is available for race and ethnicity for individual blocks. Income and poverty status data is not available for individual blocks, only Block Groups or larger areas. The U.S. Census Blocks that comprise the assessment area include the following:

- Block 3496
- Block 3497
- Block 3498
- Block 3520
- Block 3521
- Block 3522
- Block 3523
- Block 3524
- Block 3548
- Block 3549
- Block 3553
- Block 3555
- Block 3556
- Block 3557
- Block 3558
- Block 3559
- Block 3560
- Block 3561
- Block 3562
- Block 3571
- Block 3572
- Block 3756
- Block 3771

All Census Blocks comprising the assessment area are part of Census Tract 105, Block Groups 3 and 4. These are the Block Groups that were used to identify income and poverty status characteristics of the population. In addition to the above Census Blocks and Block Groups, existing property values for the properties immediately adjacent to the project area were

analyzed to determine if any of the adjacent property owners would be considered disadvantaged individuals based on property valuation.

Minority populations and low-income populations were identified in accordance with the criteria and direction provided in *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (EPA, 1998). Per the EPA final guidance, minority populations should be identified when the minority population of the affected area either:

- Exceeds 50 percent; or
- Is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The 2010 Census Summary File 1 for Nevada (U.S. Census Bureau, 2011) was used to characterize the minority and ethnic composition of the population within the assessment area. In order to establish a baseline with which to compare the minority population percentage in the assessment area, the general population of the City of Winnemucca was also characterized in terms of minority population percentage using the 2010 Census Summary File 1 (U.S. Census Bureau, 2011).

The EPA final guidance recommends that low-income populations in an affected area be identified using the annual statistical poverty thresholds from the U.S. Census Bureau Current Population Reports (EPA, 1998). The annual statistical poverty thresholds are the dollar amounts that the U.S. Census Bureau uses to determine the poverty status of a family or person (U.S. Census Bureau, 2012). If the gross income of a family or a person is below the dollar amount of their corresponding poverty threshold, then that family or person is considered to be in poverty. In conjunction with U.S. Census data, state and regional low-income and poverty definitions should also be considered, as appropriate (EPA, 1998).

Data from the 2009-2013 American Community Survey for Nevada (U.S. Census Bureau, 2014) was used to characterize the income and poverty status of the population in the assessment area. To establish a baseline for comparison, the general population of Winnemucca, Nevada, was also characterized in terms of income and poverty status using the data for Nevada (U.S. Census Bureau, 2014). Data collected from the American Community Survey is released in the form of both single-year and multi-year estimates. Because the data is reported as estimates, all data is published with a margin of error that corresponds to a 90-percent confidence level (U.S. Census Bureau, 2008). Among the data reported is the percentage of persons below the poverty level. The value is computed by dividing the sum of persons living below the poverty

level by the number of persons for whom poverty status is determined, as described in the EPA final guidance (EPA, 1998).

#### 3.4.1 Minority Populations

The project area includes public lands administered by the BLM, the existing wastewater treatment facility, and ROWs and easements within existing roads. There are no populations or people residing within the project area.

The minority and ethnic composition of the population within the Census Blocks that comprise the assessment area is presented in Table 3.4-1. The data presented in Table 3.4-1 is from the 2010 Census Summary File 1 (U.S. Census Bureau, 2011).

**Table 3.4-1 Environmental Justice Populations: Minority Population of Assessment Area**

Population Indicator	Census Blocks* (number of persons)							Assessment Area
	3520	3521	3522	3555	3556	3559	3562	
Total Population	13	14	17	3	7	51	37	142
Hispanic or Latino (any race)	4	0	0	0	4	8	1	17
Black	0	0	0	0	0	0	0	0
American Indian	0	0	0	0	0	0	0	0
Asian	0	0	0	0	0	0	1	1
Pacific Islander	0	0	0	0	0	0	0	0
Some Other Race	0	0	0	0	0	0	0	0
Two or More Races	0	0	0	0	0	0	1	1
Percent Minority**	30.8%	0%	0%	0%	57.1%	15.7%	8.1%	13.4%

Source: U.S. Census Bureau, 2011

\*All Census Blocks are in Census Tract 105, Block Groups 3 & 4. Census Blocks 3496, 3497, 3498, 3523, 3524, 3548, 3549, 3553, 3557, 3558, 3560, 3561, 3571, 3572, 3756, and 3771 are not listed because no people reside within them.

\*\*Percent minority consists of the portion of the population of all persons of any race other than white and all persons of Hispanic or Latino origin, regardless of race.

As Table 3.4-1 shows, the minority population in the total population of the assessment area is 13.4 percent, which is well below the 50 percent threshold stated in the EPA guidance.

The minority population percent of the assessment area was compared to the general population of the City of Winnemucca to determine if it was meaningfully higher than areas that would benefit from a new treatment facility but not be exposed to the same intensity of adverse effects. Table 3.4-2 presents this comparison.

**Table 3.4-2 Environmental Justice: Minority Populations**

Population Indicator	Assessment Area		City of Winnemucca	
	Number of Persons	Population Percentage	Number of Persons	Population Percentage
Total Population	142	100	7,396	100
Hispanic or Latino (any race)	17	12.0	2,024	27.4
Black	0	0	36	0.5
American Indian	0	0	137	1.8
Asian	1	0.7	60	0.8
Pacific Islander	0	0	9	0.1
Some Other Race	0	0	6	0.1
Two or More Races	1	0.7	104	1.4
Minority Population*	19	13.4	2,376	32.1

Source: U.S. Census Bureau, 2011

\*Percent minority consists of the portion of the population of all persons of any race other than white and all persons of Hispanic or Latino origin, regardless of race.

The minority population percent in the assessment area is not meaningfully greater than the minority population percentage in the general population (Table 3.4-2). Therefore, the population within the area of assessment is not identified as a minority population per the criteria provided in the EPA final guidance (EPA, 1998).

### 3.4.2 Income and Poverty Status

A summary of the income and poverty data for the population within the Block Groups comprising the assessment area is provided in Table 3.4-3. The data presented in Table 3.4-3 is from the five-year estimates reported in the 2009-2013 American Community Survey (U.S. Census Bureau, 2014). Because the data is reported as estimates, all data is published with a margin of error that corresponds to a 90-percent confidence level (U.S. Census Bureau, 2008).

**Table 3.4-3 Environmental Justice Populations: Low-Income Population of Assessment Area**

Population Indicator	Census Tract 105, Block Group 3	Census Tract 105, Block Group 4	Assessment Area*
Percent of Population Below Poverty Level	24.2%	6.5%	15.3%
Per Capita Income	\$27,497	\$30,507	\$29,002
Median Household Income	\$72,341	\$49,886	\$61,113

Source: U.S. Census Bureau, 2014  
 \*Average of Block Group 3 and 4

A comparison of the income and poverty data for the population of the assessment area and the general population of the City of Winnemucca is provided in Table 3.4-4.

**Table 3.4-4 Environmental Justice Populations: Low-Income Populations**

Population Indicator	Assessment Area	City of Winnemucca
Percent of Population Below Poverty Level	15.3%	9.9%
Per Capita Income	\$29,002	\$30,396
Median Household Income	\$61,113	\$70,266

Source: U.S. Census Bureau, 2014

The per capita income and median household income of the population of the assessment area is not meaningfully different than the general population of the City of Winnemucca (Table 3.4-4). The percent of persons below the poverty level in the assessment area is meaningfully greater than the general population. Accordingly, the population of the assessment area is identified as an environmental justice population.

### 3.4.3 Property Values of Adjacent Properties

To determine if individuals surrounding the project area may be considered disadvantaged, an analysis of property values was conducted on those properties immediately adjacent to the project area. An average property value was calculated based on estimate housing valuation obtained from Zillow. Zillow was the primary source of property value data because property and house valuation is more accurate compared to current market conditions as opposed to the county assessment values which tend to be lower than market conditions. Average residential property and housing values for the properties immediately east of the project area are approximately \$183,400 (Figure 3.4-1) (Zillow, 2015). The average residential property and housing values for the properties approximately one mile east of the project area are \$192,800 (Figure 3.4-1) with one outlier property value estimated at \$9,000 and another outlier property value estimated at \$468,000 (Zillow, 2015). The ranch house immediately north of the project area located at 3305 W. W2 Ranch Road, has an estimated value of \$338,000 (Figure 3.4-1)

(Zillow, 2015). The property value of the industrial property immediately west of the project area located at 5505 Cyanco Drive is \$261,393. According to Zillow, as of February 2015, the median list price of houses in Humboldt County is \$148,000 and \$158,000 in the City of Winnemucca. The property and housing values of properties adjacent to the project area are in line with existing housing values within Humboldt County and the City of Winnemucca and in some cases, the property values are greater.

### **3.5 Floodplains**

The affected environment for floodplains consists of the existing and proposed portions of the project area remaining within the 100 year floodplain. Figure 3.5-1 shows the mapped regulatory floodplain within this area.

The Federal Emergency Management Agency (FEMA) is responsible for mapping flood hazards as part of the National Flood Insurance Program. According to FEMA's National Flood Hazard online web map (FEMA, 2015), the existing wastewater treatment plant is within the one-percent annual chance flood hazard zone (also known as the 100-year floodplain) associated with the Humboldt River. Under the proposed action, portions of the facility (existing influent pipeline tie-in, IPS, and first (3,546 feet) of the proposed influent pipeline), would remain in the mapped regulatory floodplain. The remainder of the project area, including the majority of the influent pipeline corridor and the R&PP lands, are outside the regulatory floodplain.

### **3.6 Human Health and Safety**

The affected environment for human health and safety consists of the R&PP boundary.

A Phase I ESA was conducted by Pezonella in 2014 for the property within the R&PP boundary. Two issues were identified through the ESA, an 8-inch open well casing and a septic tank. The 8-inch steel well casing is present on the north side of Jungo Road, north of the west side of the small concrete slab that formerly held a pump house for the Sunshine Bentonite Mill (Pezonella, 2014; Figure 3.6-1). The casing is required to be properly abandoned per State of Nevada Register of Administrative Regulations prior to conveyance of title to the City of Winnemucca. The location of the septic tank was marked (Figure 3.6-1) as a safety precaution in case of future expansion. No other concerns exist with respect to health or safety issues in accordance with the American Society for Testing and Materials (ASTM E 1527-13).

Human health and safety regarding herbicide use was evaluated in the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM, 2007). There are no known existing human health and safety concerns or issues in the project area related to herbicides.

### **3.7 Migratory Birds**

The affected environment for migratory birds is the project area. Based on the type of project and habitat conditions at the location, the project area is sufficient.

A migratory bird survey using the BLM Winnemucca District Office protocol was conducted within the R&PP boundary. In accordance with protocol, three surveys were conducted over three consecutive weeks. The surveys noted the following species as occurring in the project area: rock dove (*Columba livia*), horned lark (*Eremophila alpestris*), Canada goose (*Branta canadensis*), red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus barchyrhynchos*), house finch (*Haemorhous mexicanus*), western meadowlark (*Sturnella neglecta*), and American kestrel (*Falco sparverius*) (Stantec, 2015b).

### **3.8 Water Quality, Surface and Ground**

*As identified in Table 3.1-1, only groundwater is affected.*

The affected environment for groundwater quality is the Nevada State Water Plan Subbasin 070 (Winnemucca Segment; Figure 3.8-1). The Winnemucca Segment is a subbasin of a Designated Groundwater Basin (No. 4 - Humboldt River Region). The NDWR has determined that the perennial yield of Basin No. 4 as a whole is 463,900 acre-feet/year, of which the Winnemucca Segment's perennial yield is 17,000 acre-feet/year (NDWR, 2015a).

The close relationship between flow in the Humboldt River near the City of Winnemucca and shallow groundwater moving through the alluvial deposits through which the river flows has been known for more than 50 years. As described by the U.S. Geological Survey (1966), the relationship also means that the quality of the local surface waters and groundwater is similar. The alluvium in the area varies by age, source, and permeability. Most important for local groundwater flow in and near the project area appears to be medial and younger alluvium, including lakebed, floodplain and terrace deposits as well as alluvial fans from side channels. Direction of flow during most of the year would be towards the Humboldt River, where it would then enter the river as surface flow, continue downstream in the alluvium, or evapotranspire (USGS, 1966). During the river's high-flow months (spring and early summer), the gradient typically reverses and the alluvial aquifer is recharged by streamflow (USGS, 1966; NDEP, 2010).

Near the eastern boundary of the project area, the depth to groundwater averages about 8 to 18 feet below ground surface (NDEP, 2010). Near the western end of the project area, depth to groundwater is greater, likely between 50 and 100 feet below ground surface, based upon a review of nearby drilling records (NDWR, 2015b). For example, information submitted from

drilling a nearby irrigation well in 2005 (within a half mile of the project area) noted the static water level at 57 feet below ground surface (NDWR, 2005).

The chemical quality of shallow groundwater near the Humboldt River has been characterized as moderately hard to very hard; no data is provided but numerical ranges associated with those categories spans from 61 mg/L to more than 180 mg/L of calcium carbonate (USGS, 1966). According to the same source, total dissolved solids range from 500 to 750 mg/L with some areas having much higher, but not quantified, concentrations (USGS, 1966). The report notes a dominance of sodium and bicarbonate, but does not provide actual quantitative values (USGS, 1966). In 2012, a sample collected from the irrigation well located within a half mile from the project area and approximately 1.5 miles away from the Humboldt River, showed groundwater with a hardness of 255 mg/L and total dissolved solids of about 590 mg/L, of a mixed type with calcium/sodium-bicarbonate dominance (Stukenholtz Laboratory, Inc., 2012).

NDEP, as the regulatory authority, requires the City of Winnemucca's wastewater treatment facility to meet all State standards to protect water resources. The City of Winnemucca's existing wastewater treatment system has contributed treated effluent to the shallow alluvial aquifer adjacent to the Humboldt River for over the life of the facility. Some of the effluent discharge evaporates while the remainder percolates through to the alluvium. NDEP regulates this facility through the aforementioned discharge permit (No. NEV40037) to ensure that groundwater quality is protected, in part through establishing limits on how much water can be treated, and on influent/effluent quality (NDEP, 2010).

As per the NDEP discharge permit, the effluent quality from the existing wastewater treatment system is currently monitored for BOD, total suspended solids, pH, and nitrogen (nitrates, ammonia, and total nitrogen). Compliance with effluent limitations is generally attained, though occasional exceedances occur and are reported to NDEP (Carollo, 2014). The current permit also requires quarterly sampling of nitrate, total nitrogen, chloride, and total phosphorous in three monitoring wells (one up-gradient and two down-gradient of the system). This monitoring well data is used to assess the RIB performance and to track groundwater quality; of the monitored parameters only total nitrogen has an established limitation, which is 10.0 mg/L as N (NDEP, 2010). In general this limitation is met, however in three samples collected between 2004 and 2013, the up-gradient well had total nitrogen concentrations that were greater than 10 mg/L (Carollo, 2014). Specifically, total nitrogen (as N) was reported at approximately 48 mg/L in first quarter 2012, and approximately 24 mg/L in both second and third quarter of that same year, for reasons that were not determined (Carollo, 2014). See Carollo (2014) for more details on data collected between 2004 and 2013.

### 3.9 Wetlands and Riparian Zones

The affected environment area for impacts to wetlands and riparian zones is that portion of the project which lies in or adjacent to mapped wetlands according to USFWS’s National Wetlands Inventory (USFWS, 2015). The wetlands within and adjacent to the IPS are listed as freshwater forested/shrub wetlands (Figure 3.9-1).

The IPS and the initial stretch of the influent pipeline leading to the IPS are within mapped wetlands (Figure 3.9-1). These areas are disturbed by the existing wastewater treatment facility and are not functional wetlands. Similarly, the existing primary and secondary aeration ponds and the maturation pond are located within the mapped wetlands, but this area no longer functions as wetlands due to these features.

### 3.10 Lands and Realty

The affected environment for lands and realty is the project area.

The project area is located within the checkerboard pattern of public and private lands in northern Nevada (Figure 3.10-1). This pattern extends to either side of the Humboldt River for approximately 20 to 25 miles.

There are 11 authorized ROWs in the project area (Table 3.10-1). The authorized ROWs include road, oil and gas pipeline, transmission line, telephone/telegraph line, and railroad.

**Table 3.10-1 Authorized ROWs in Project Area**

Serial Number	Type of Use	ROW Holder	Location
NVN 0064630	Oil and Gas Pipeline	Southwest Gas	T. 36 N., R. 37 E., sec. 28
NVN 0065131	Oil and Gas Pipeline	Southwest Gas	T. 36 N., R. 37 E., sec. 28
NVN 017686	Transmission Line	Sierra Pacific Power Company dba NV Energy	T. 36 N., R. 37 E., sec. 28
NVN 043040	Transmission Line	Sierra Pacific Power Company dba NV Energy	T. 36 N., R. 37 E., sec. 32
NVN 092878	Transmission Line	Sierra Pacific Power Company dba NV Energy	T. 36 N., R. 37 E., sec. 28
NVN 051585	Road	Humboldt County	T. 36 N., R. 37 E., sec. 32
NVN 053607	Road	Humboldt County	T. 36 N., R. 37 E., sec. 28
NVN 075457	Road	Wester Wallace	T. 36 N., R. 37 E. sec. 28
NVN 042787	Fiber Optic Telephone Line	Sprint Communications	T. 36 N., R. 37 E., sec. 32
NVN 051360	Telephone/Telegraph	Nevada Bell	T. 36 N., R. 37 E., sec. 28 and 32
NVCC 0004692	Railroad	Union Pacific Railroad	T. 36 N., R. 37 E. sec. 32

Source: LR2000

Land uses in the general area include livestock grazing, agriculture, industrial manufacturing (e.g., Cyanco), rural residential development, railroad transportation, municipal services (existing wastewater treatment facility), materials sites, and utilities infrastructure.

### **3.11 Social and Economic Values**

The affected environment for social and economic values consists of the City of Winnemucca and Census Tract 105 which includes the project area and western and northern Humboldt County (Figure 3.11-1). This area was selected because it incorporates the primary areas subject to social and economic impacts from the proposed project. Social and economic impacts are not expected to occur outside of this area. Where specific economic characteristics were not available for the City of Winnemucca or Census Tract 105, economic characteristics for Humboldt County were used in the analysis.

#### Economic Setting

Humboldt County's economy is derived substantially from natural resource extraction, primarily mining and agriculture. Mining contributes major revenues to the area. The City of Winnemucca is also home to the largest potato field in the U.S., and was once the largest potato dehydration facility in the world. The dominant land use in the City of Winnemucca is residential, while the dominant land use in the outer county is rangeland, agriculture, and mining (Humboldt County, 2012).

The City of Winnemucca and other areas in Humboldt County reflect the diverse historical and cultural influences of the people who have inhabited the area over the ages, including Native Americans, Hispanics, Basques, and Chinese. The communities in the region have a strong sense of identity based on a heritage which includes early pioneers and the associated migration of people, the railroad and transport of goods, mining camps, ranching, farming, and gambling (Humboldt County, 2012).

The mining economy represents the single greatest concentration of capital investment, human resources and skills, technology, equipment, and land. Agriculture continues to contribute to the economy of Humboldt County, which includes both ranching and the production of alfalfa hay, alfalfa seed, spring and winter wheat, barley, and potatoes. The Humboldt County Master Plan goals and policies recognize the need to achieve a diversified and stable economy not tied to a single industry, such as mining (Humboldt County, 2012).

#### 3.11.1 Population and Housing

The project area is within Humboldt County and is bordered by the City of Winnemucca to the east. The City of Winnemucca is an incorporated city within Humboldt County. Table 3.11-1

summarizes the existing population data for the affected communities. Humboldt County population data is included to compare the assessment area statistics with the total Humboldt County statistics. County and city data presented in this table are from the Nevada State Demographer (2014). Population for Census Tract 105 are not available from the Nevada State Demographers Office but were obtained from the 2010 U.S. Census, which is the most recent U.S. Census.

**Table 3.11-1 Population Characteristics of the Affected Environment**

Affected Community	2010 Population
Humboldt County, Nevada	18,364
City of Winnemucca, Nevada	7,961
Census Tract 105, Humboldt County, Nevada	6,116

Source: Nevada State Demographer’s Office, 2014; U.S. Census Bureau, 2010

Table 3.11-2 displays population trends from 2000 to 2014 and the percent change over the 14-year period in Humboldt County and the City of Winnemucca, as provided by the Nevada State Demographers Office. Population trends for Census Tract 105 are not available from the Nevada State Demographers Office. The U.S. Census data shows a population decline from 6,154 people in 2000 to 6,116 people in 2010 in Census Tract 105 (U.S. Census Bureau, 2000 and 2010).

As Table 3.11-2 shows, the population of Humboldt County and the City of Winnemucca has fluctuated over the 14-year period, with the population from 2000 to 2014 decreasing in both Humboldt County and the City of Winnemucca. The Nevada State Demographers Office 2015 five-year projections show the Humboldt County population increasing by approximately 4.6 percent from 2015 to 2019 (from 17,687 in 2015 to 18,502 in 2019) (Nevada State Demographers Office, 2015).

**Table 3.11-2 Population Trends of Humboldt County and the City of Winnemucca**

Affected Community	Population by Year (number of persons)								Percent Change (14-year period)
	2000	2002	2004	2006	2008	2010	2012	2014	
Humboldt County, Nevada	18,189	16,308	16,692	17,751	18,014	18,364	17,384	17,388	-4%
City of Winnemucca, Nevada	8,884	7,234	7,249	7,643	7,659	7,961	7,997	8,042	-9.5%

Source: Nevada State Demographer’s Office, 2014

Table 3.11-3 summarizes key housing data for the affected communities. Housing stock and vacancy rates in the assessment area are low, with vacant housing primarily consisting of rental housing rather than for-sale housing stock.

**Table 3.11-3 Housing Characteristics - 2013**

Housing Characteristics	Humboldt County	City of Winnemucca	Census Tract 105
Total Housing Units	7,111	3,248	2,833
Occupied Housing Units	6,314	2,983	2,313
Percent of Total Units Occupied	89%	92%	82%
Owner-Occupied Units	4,464	1,973	1,627
Owner Occupied (Percent)	71%	66%	70%
Renter-Occupied Units	1,850	1,010	686
Renter Occupied (Percent)	29%	34%	30%
Vacant Housing Units	797	265	520
Vacancy Rate (Percent)	11%	8%	18%
Vacant Units: Seasonal and Migrant Workers	215	24	134
Vacancy Rate, Excluding Seasonal and Migrant Workers (Percent)	8%	7%	14%
Average Household Size (Occupied Units)	2.63	2.53	2.62
Median Contract Rent (U.S. Dollars)	\$557	\$577	\$757
Median Value of Owner Occupied Units (U.S. Dollars)	\$147,400	\$177,500	\$138,600

Source: U.S. Census Bureau, 2013a, 2013b, 2013c, and 2013d

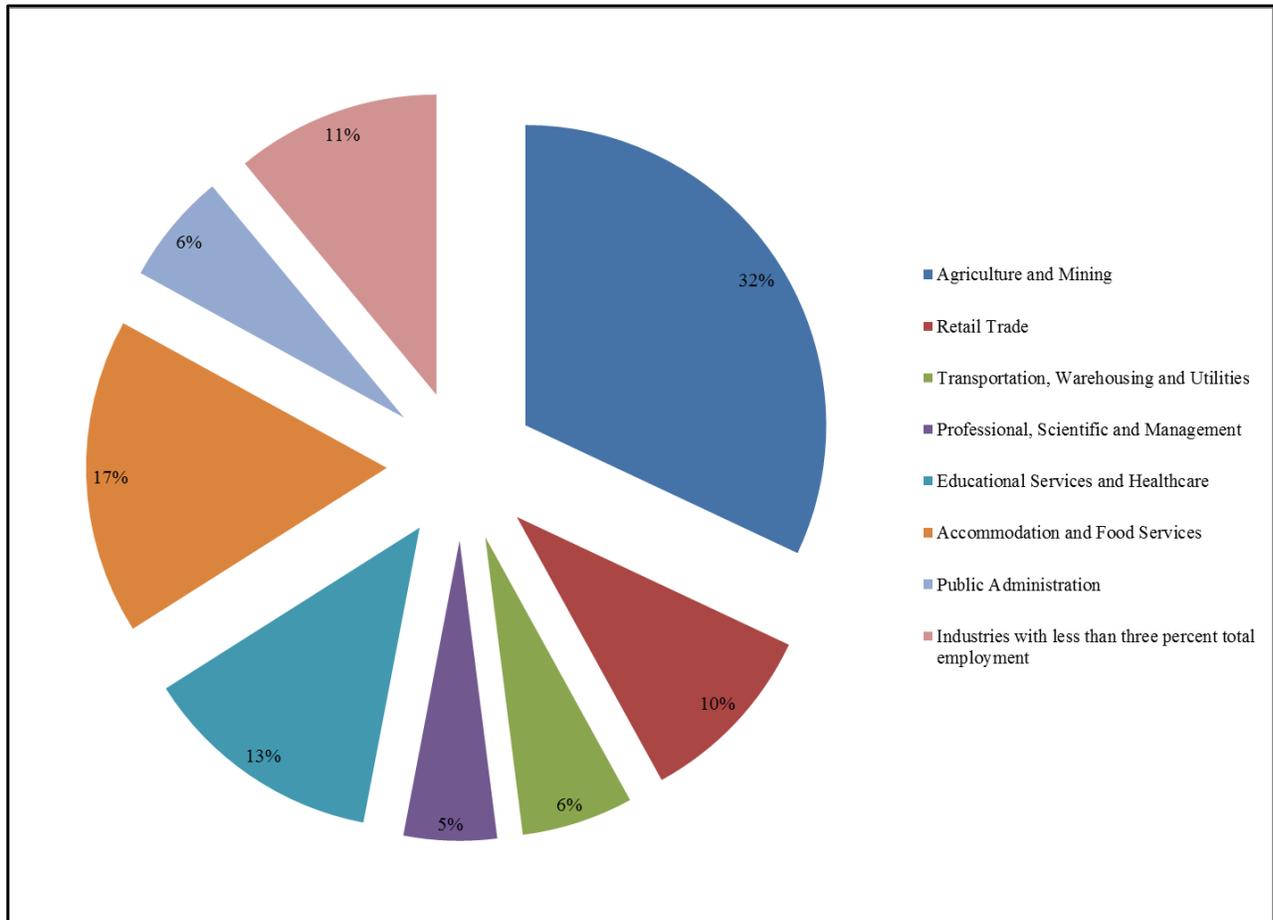
Average household size is approximately 2.6 in Humboldt County and Census Tract 105, and 2.5 in the City of Winnemucca. Median contract rent is \$577 in the City of Winnemucca and \$757 in Census Tract 105, which is approximately 31 percent higher than in the City of Winnemucca. The median housing value in Census Tract 105 is \$138,600. The median housing value in the City of Winnemucca is \$177,500, approximately 20 percent higher than in Humboldt County and approximately 28 percent higher than in Census Tract 105.

### 3.11.2 Labor Force and Employment

Labor force is an economic measure that indicates how many people are seeking employment, and is the basis for deriving an unemployment rate. Labor force and unemployment rates are typically not generated for areas smaller than County designations, therefore labor force and unemployment rates for Humboldt County are based on information estimates by the Nevada Division of Employment, Training and Rehabilitation (NDETR, 2015). Charts 3.11-1, 3.11-2, and 3.11-3 show employment by place of work in Humboldt County, the City of Winnemucca, and Census Tract 105, respectively, based on U.S. Census Bureau 2009 to 2013 American Community Survey Five Year Estimates. In 2013, employment in Humboldt County, the City of

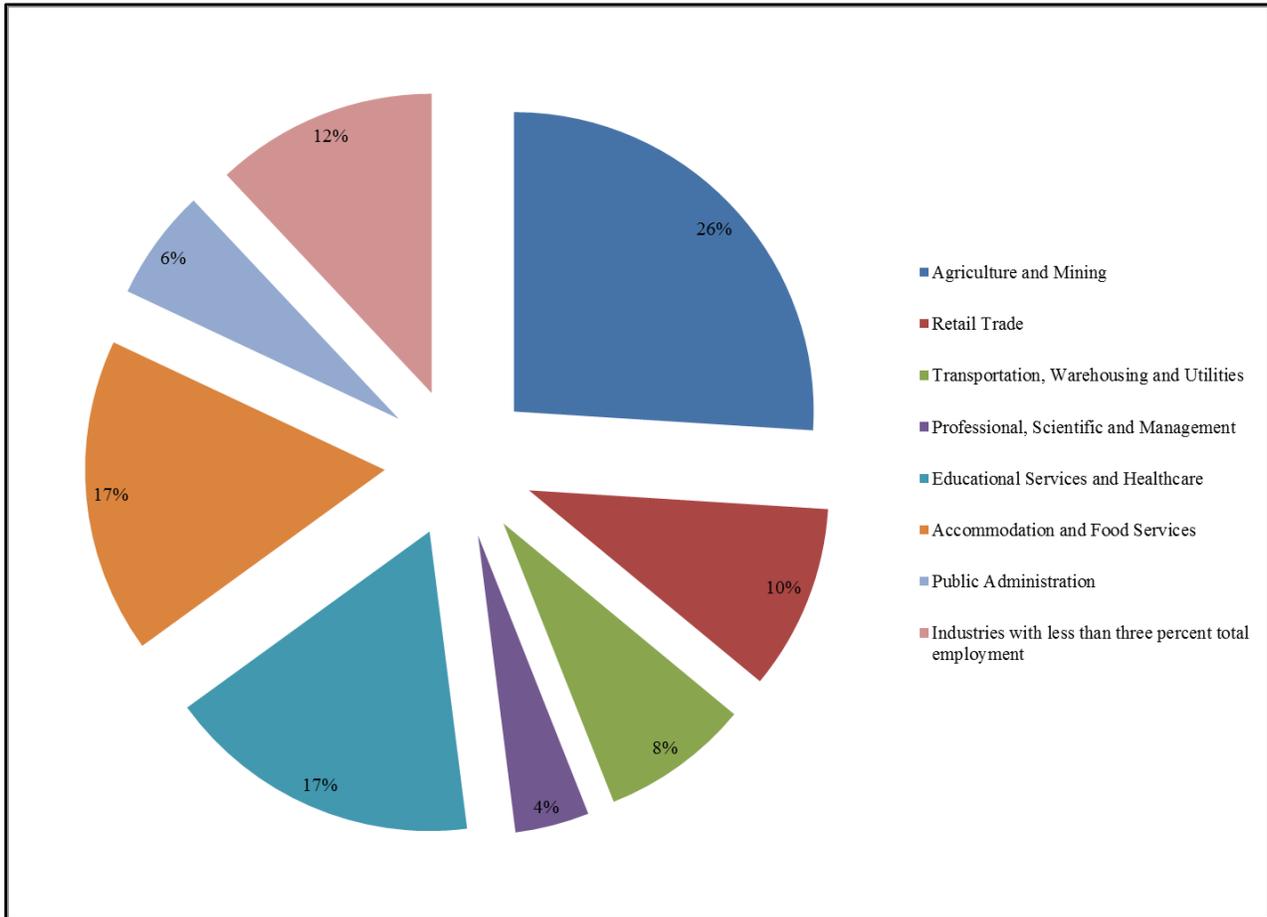
Winnemucca, and Census Tract 105 was concentrated in the agriculture and mining industry, as well as the accommodation and food services industry. In the City of Winnemucca, educational services and health care were also a large employment industry, with employment in the education and health care services equal to the employment percentage in the accommodation and food service industry. This is likely due to the Humboldt General Hospital (HGH) and other health care and educational facilities in the City of Winnemucca.

**Chart 3.11-1 At-Place Employment by Sector, Humboldt County**



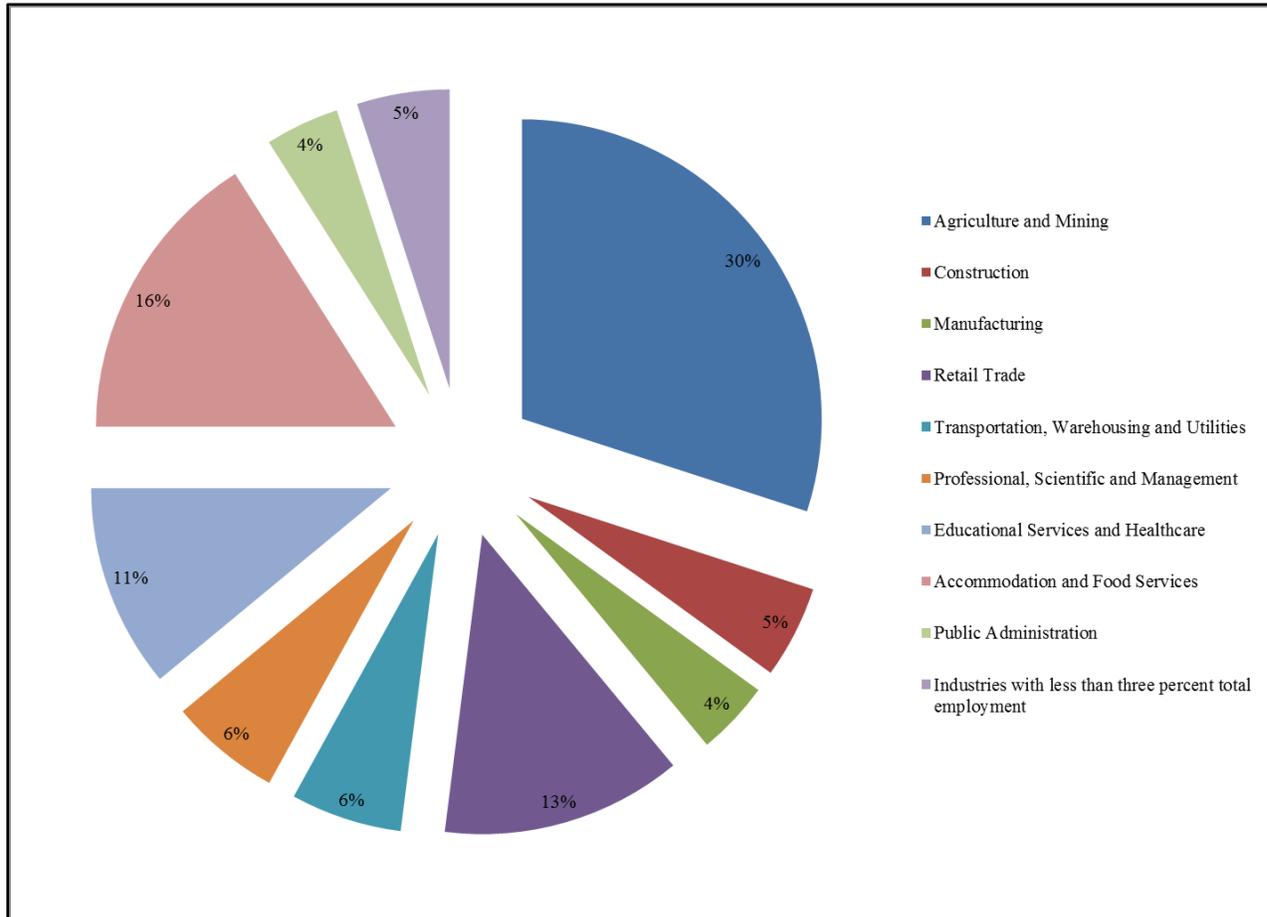
Source: U.S. Census Bureau, 2013e

**Chart 3.11-2 At-Place Employment by Sector, City of Winnemucca**



Source: U.S. Census Bureau, 2013e

**Chart 3.11-3 At-Place Employment by Sector, Census Tract 105**



Source: U.S. Census Bureau, 2013e

Table 3.11-4 shows the most current annual employment status of Humboldt County, and how it compares to 2014 labor force and employment data. As is shown in the table, unemployment in Humboldt County fell slightly from 2014 to 2015, but the labor force also decreased.

**Table 3.11-4 2015 Employment Statistics**

Indicator	Humboldt County	
	2014	2015
Labor Force	8,969	8,588
Employment	8,419	8,085
Unemployed	550	503
Unemployment Rate	6.0	5.9

Source: NDETR, 2015

### 3.11.3 Labor and Personal Income

Additional information on median household income, per capita income, and poverty status within the assessment area can be found in Section 3.4.2. An analysis of personal income is provided in Table 3.11-5, and shows that personal income in Humboldt County has increased from 2010 to 2013. This data is taken from the Bureau of Economic Analysis data for 2013 which is the most current year income data is available. Table 3.11-5 includes a residency adjustment, which is an adjustment that credits earnings made by residents living in one county but working in another county and bringing the wages back to the county of residence. Since 2011, there has been a positive adjustment to earnings reflecting the fact that there are more residents of Humboldt County who work outside the county than there are workers commuting to Humboldt County to work.

**Table 3.11-5 Personal Income by Place of Residence**

Description	2010	2011	2012	2013
<b>Derivation of Personal Income</b>				
Earnings by Place of Work	\$552,953,000	\$602,779,000	\$622,506,000	\$658,751,000
Residency Adjustment	(\$1,567,000)	\$3,014,000	\$8,159,000	\$11,547,000
Social Security Deductions	(\$54,291,000)	(\$53,565,000)	(\$55,456,000)	(\$62,712,000)
Other Income for County Residents (Including Dividends, Interest, Rent and Transfer Receipts)	\$172,357,000	\$192,765,000	\$222,882,000	\$221,819,000
Total Resident Personal Income	\$669,452,000	\$744,993,000	\$798,091,000	\$829,405,000
Per Capita Income	\$40,294	\$44,715	\$46,743	\$47,769

Source: BEA, 2015a

Information on total wages received by workers in Humboldt County is provided by the Nevada Department of Employment, Training and Rehabilitation. In the first quarter of 2015, the average weekly wage paid to workers in the mining sector was \$2,123. This is substantially higher than the average weekly wage for all covered workers of \$1,105 (NDETR, 2015). According to 2013 estimates from the Bureau of Economic Analysis, the mining sector accounted for 21 percent of covered employment in Humboldt County, but paid \$235,399,000 in wages, which is more than 50 percent of the total wages paid by all industries in 2013 (\$462,243,000). In 2013, government sector jobs accounted for 14 percent of all covered employment which was the second highest amount of wages paid (\$108,532,000) accounting for approximately 23 percent of total wages paid in 2013. Agriculture and farm earnings accounted for approximately 10 percent of total wages paid in 2013 with \$45,488,000, but only accounted for four percent of total employment (BEA, 2015a and 2015b).

### 3.11.4 Local Government Finances

Humboldt County derives their revenues through a variety of taxes and fees, collected locally or at the state level for distribution to each county. Revenues include ad valorem property taxes on real and personal property (i.e., based on the value of a transaction or of property). State shared revenues include sales, motor vehicle, fuel, and gaming taxes. Intergovernmental revenue includes state grants and state-shared revenue and federal pass through grants, leases, and Payment in Lieu of Taxes. The 2014 revenues and expenses for Humboldt County and the City of Winnemucca are shown in Table 3.11-6 and Table 3.11-7, respectively. The largest revenue source for Humboldt County in 2014 was intergovernmental revenues, followed by taxes.

**Table 3.11-6 Humboldt County Local Government Finances 2014**

<b>Revenues</b>	
Taxes	\$9,624,134
Licenses and Permits	\$1,322,921
Intergovernmental Revenues	\$19,334,517
Charges for Services	\$1,044,367
Fines and Forfeits	\$716,531
Miscellaneous	\$571,362
<b>Total Revenues</b>	<b>\$32,613,832</b>
<b>Expenditures</b>	
General Government	\$5,744,622
Judicial	\$4,139,310
Public Safety	\$9,822,081
Public Works	\$4,540,672
Health	\$259,416
Welfare	\$589,655
Culture and Recreation	\$2,127,004
Community Support	\$1,503,639
Intergovernmental Expenses	\$948,496
<b>Total Expenditures</b>	<b>\$29,674,895</b>
<b>Excess Revenues Over (Under) Expenditures</b>	<b>\$2,938,937</b>

Source: Humboldt County Comptroller, 2014

**Table 3.11-7 City of Winnemucca Local Government Finances 2014**

<b>Revenues</b>	
Property Taxes	\$1,884,956
Other Taxes	\$245,094
Licenses and Permits	\$584,799
Intergovernmental Revenues	\$4,918,347
Charges for Services	\$281,053
Miscellaneous	\$2,404,939
<b>Total Revenues</b>	<b>\$10,319,188</b>
<b>Expenditures</b>	
General Government	\$966,010
Judicial	\$103,041
Public Safety	\$3,984,545
Public Works	\$1,046,566
Culture and Recreation	\$861,016
Capital Outlay	\$3,916,799
Debt Service	
Principal	\$173,684
Interest	\$22,437
<b>Total Expenditures</b>	<b>\$11,074,098</b>
<b>Excess Revenues over (Under) Expenditures</b>	<b>(\$754,910)</b>

Source: City of Winnemucca, 2014

### 3.11.5 Community Facilities and Services

#### *Education*

Public elementary and secondary schools in Humboldt County and the City of Winnemucca are managed by the Humboldt County School District. As of 2015, there are 14 schools in Humboldt County, with one being inactive (Humboldt County, 2012). Approximately 3,473 students were enrolled in Humboldt County public schools for the 2014-2015 school-year (HCSD, 2015a). The capacity to handle additional growth varies by school with the student/teacher ratio for all Humboldt County public schools being 21:1, with an average class size of 20-23 (HCSD, 2015b). Higher education opportunities include Great Basin College which has a branch campus in the City of Winnemucca.

#### *Public Safety*

##### Law Enforcement

Law enforcement within the assessment area includes the Humboldt County Sheriff's Department and the City of Winnemucca Police Department. The City of Winnemucca Police Department includes an Investigations Division and a Patrol Division.

## Fire

Fire departments within Humboldt County and the City of Winnemucca include the McDermitt Fire Department, Orovada Fire Department, Valmy Fire Department, the Winnemucca Rural Fire Department, and the Winnemucca Volunteer Fire Department. The majority of these fire departments are volunteer fire departments.

## Emergency Response Services

According to the Nevada State Office of Rural Health's Nevada Rural and Frontier Health Data Book, Humboldt County has 216 licensed Emergency Medical Technicians, of which 12 are advance paramedics and 120 are first responders (Nevada State Office of Rural Health, 2015). HGH Emergency Medical Services (EMS) Rescue provides 24-hour emergency medical services across Humboldt County, parts of Pershing County and Lander County, and the lower portion of the State of Oregon (HGH, 2015). HGH EMS rescue provides advanced life support services and has a fleet of 18 ambulances and two rescue units. Staff includes over 50 paramedics (HGH, 2015).

### 3.11.6 Health Care

Most health care services in Humboldt County are concentrated in the City of Winnemucca. HGH is Humboldt County's only hospital, with hospital and emergency services including emergency rooms, laboratory facilities, long-term care facilities, radiology services, surgery services, cardiac rehabilitation, and an obstetrics department. HGH also has a social services department. In 2015, Humboldt County was not considered a Primary Medical Care Health Professional Shortage Area in Nevada but was considered a Mental Health Professional Shortage Area (Nevada State Office of Rural Health, 2015).

### 3.11.7 Utilities

#### *Water*

Most of the public water service is provided by the City of Winnemucca. According to the 2012 Humboldt County Master Plan update, the Winnemucca municipal water system serves approximately 9,000 customers plus the hotels, motels, recreational vehicle parks, and other businesses located within the City of Winnemucca. The system has five deep water wells with capacities of between 1,000 gpm and 3,500 gpm. One completely enclosed spring provides an annual average output of between 80 and 140 gpm. The system has five water pumping stations and 10 steel tanks with a total capacity of nearly 10 million gallons. The annual average water use of the system varies between 3.0 and 3.5 mgd, while the peak month water use varies between 5.5 and 8.0 mgd. Other community water systems operating within Humboldt County are found in Golconda, McDermitt, Orovada, and Gold Country Estates. Developed areas located

outside of the above listed established services areas received water from private individual wells, developed springs, or localized non-community systems (Humboldt County, 2012).

#### *Wastewater*

According to the 2012 Humboldt County Master Plan update, the Winnemucca municipal sewer system serves approximately 9,000 customers plus the hotels, motels, recreational vehicle parks, and other businesses located within the City of Winnemucca. The annual average sewage flow rate at the treatment facility is between 0.8 and 1.3 mgd. The sewage treatment plant capacity is 2.0 mgd and the collection system includes two large and three small pumping stations. The treated effluent from the plant is placed into five rapid infiltration ponds where it percolates into the ground and evaporates into the air. Other sewage treatment lagoon systems operating within Humboldt County are found in McDermitt, Paradise Valley, and Orovada. Developed areas outside of the above listed established service areas are served by individual sewage disposal systems (septic tanks) (Humboldt County, 2012).

#### *Solid Waste Disposal*

Solid waste disposal is provided at the Humboldt County Regional Landfill and four rural collection sites in Orovada, Paradise Valley, Denio, and Kings River, with most being limited to individual collection and hauling. The Winnemucca area is served by two private collection companies. The Winnemucca Area Solid Waste Management District is operated by a private operator under contract with the City of Winnemucca and Humboldt County. The landfill site is 240 acres in size and is adjacent to lands administered by the BLM (Humboldt County, 2012).

#### *Electrical Power and Natural Gas*

Humboldt County is served by two electric companies: NV Energy and Harney Electric Cooperative, Inc. NV Energy serves the eastern portion of Humboldt County including the City of Winnemucca. Harney Electric Cooperative Inc. serves western Humboldt County including McDermitt, Orovada, and Denio. Natural gas is distributed to the City of Winnemucca and surrounding areas by the Southwest Gas Corporation. Several smaller companies provide heating fuels throughout Humboldt County (Humboldt County, 2012).

### **3.12 Visual Resources**

The affected environment for purposes of this analysis is the City of Winnemucca and those facilities in reasonably close proximity to the Project Area. In terms of visual resources, the only issue that needs to be analyzed is the potential to impact dark skies and therefore it is the focus of this analysis.

Dark sky resources include stars, constellations, comets, meteor showers, and other similar astronomical features or phenomena that are typically best viewed during nighttime hours. Clear, dark skies, free of light emissions are increasingly rare. Urban sky glow, a type of light pollution, which brightens the dark sky, is responsible for diminishing the ability to observe dark sky resources in inhabited areas or areas with excessive lighting. Light that is emitted upward and laterally from outdoor artificial lights scatters through the atmosphere and causes a loss in dark sky visibility.

Existing light sources in the assessment area include the City of Winnemucca, industrial complexes (e.g., Cyanco and Minade), sparsely populated residential area, the existing wastewater treatment facility, lighted race tracks (summer season), headlights from vehicles on Jungo Road and I-80. The lighting at the existing facility is comprised of a single, unshielded, pole-mounted yard light.

## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 Direct and Indirect Impacts

For the purposes of this analysis, the project area is defined as section 28 in its entirety, a portion of the area north of the railroad in section 32, the influent pipeline corridor, and the existing wastewater treatment facility (Figure 1.2-1). The R&PP boundary is defined as section 28 and a portion of section 32 north of the railroad (Figure 1.2-1). The analysis area is identified for each resource topic within each section of this chapter.

#### 4.1.1 Air Quality

The analysis area encompasses the project related disturbances and extends out approximately 12,000 feet from the project area. This is the area where the greatest impact to air quality would be expected.

##### *Proposed Action*

Construction and operation phases of the project have the potential to affect air quality. The majority of these emissions are expected to occur during the construction phase. The analysis of air quality focuses on the construction related emissions. Construction phase emissions were calculated using information from the Wastewater Treatment and Effluent Disposal Facilities Plan (Carollo, 2014) and assumptions for specific type and engine size on construction equipment. EPA emission factors for both mobile and stationary sources were calculated based on a conservative scenario with all areas disturbed over the course of one year. Sources include vehicular emissions and fugitive surface area disturbance emissions. Table 4.1-1 shows the fugitive emissions and the gaseous emissions from the construction phase of the project. Hazardous Air Pollutants would not be emitted.

**Table 4.1-1 Fugitive and Gaseous Emissions Associated with the Project**

Equipment	Tons per Year						
	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Construction Disturbance Fugitive Emissions	13.08	4.95	2.72	2.49	38.34	9.96	10.76
Construction Equipment and Vehicle Emissions	6.17	3.09	0.46	-	-	-	-
Total	19.25	8.04	3.18	2.49	38.34	9.96	10.76

Source: Stantec, 2015a

PM: Particulate Matter

CO: Carbon monoxide

SO<sub>2</sub>: Sulfur dioxide

VOC: Volatile Organic Compounds

NO<sub>x</sub>: Oxides of Nitrogen

Combustion of fuel in vehicles results in emissions of GHGs for this project. GHGs are calculated much like any other pollutant, but then the gasses potential to emit are multiplied by a Global Warming Potential factor and summed together to be represented as carbon dioxide

equivalents (CO<sub>2</sub>e). Emissions calculations for project specific equipment are included in the emissions summary (Table 4.1-1). In 2013, the national annual emissions of CO<sub>2</sub>e were approximately 6,673 million metric tons of CO<sub>2</sub>e (EPA, 2015a). In Nevada, the statewide gross CO<sub>2</sub>e emissions were approximately 45 million metric tons of CO<sub>2</sub>e in 2010 (NDEP, 2012). The project emissions total 1,668.3 tons per year (1,513.5 metric tons), which represents approximately 0.0034 percent of the GHG emissions from all sources in Nevada, and a much smaller fraction of the emissions on a national or global basis.

Methane is a GHG of concern normally associated with wastewater and wastewater treatment. Methane can form in sewer systems and be transferred to the wastewater treatment facility as dissolved methane in influent. Methane can also be expected to form in the sludge holding tanks. If excessive amounts of methane were expected from the new facility, burning of the off-gas would likely be necessary. The new facility is expected to produce less methane than the current facility, which does not need to burn off-gas; therefore the need to burn-off gas at the new facility is not anticipated. Due to the type of treatment system at the new facility, less methane production is expected than at the existing facility.

#### *No Action Alternative*

Under the No Action Alternative, there would be no disturbance or construction activities. Operation of the existing facility produces some amount of emissions from passenger vehicles going to and from the facility and methane from the lagoon system at the existing facility, but no additional direct or indirect impacts to air quality are expected.

#### 4.1.2 Environmental Justice

The analysis area for environmental justice consists of the Census Blocks and Block Groups that would be located within or adjacent to the project. See Section 3.4 for a complete description of the analysis area for environmental justice.

#### *Proposed Action*

Demographic conditions found within the analysis area were used to analyze whether the proposed project would disproportionately impact minority populations or low-income populations. The majority of the analysis area (22 out of 23 Census Blocks) is not identified as a minority population because the minority population is below the 50 percent threshold stated in the EPA guidance, and it is not meaningfully greater than the minority population of the City of Winnemucca. The minority population of Census Block 3556, which is a part of the analysis area, is 57.1 percent which would be considered a minority population by the EPA guidance. The likely reason for the high percentage of minority populations within this Census Block is because it is a very small area (approximately 3,500 square feet) with a small population (seven people).

Any potential impacts from the project would be dispersed collectively throughout the analysis area and would not disproportionately impact this Census Block. The proposed project would not have disproportionate impacts to minority populations.

The analysis area would be considered a low income community when analyzed against the population of the City of Winnemucca as a whole. The percent of the population considered to be living below the poverty level by the U.S. Census Bureau data is 15.3 percent, whereas the percent of the population within the City of Winnemucca living below the poverty level is 9.9 percent. The per capita income and the median household income are not meaningfully lower in the analysis area when compared to the City of Winnemucca, with the per capita income only being five percent lower in the analysis area when compared to the City of Winnemucca and the median household income only being 15 percent lower in the analysis area when compared to the City of Winnemucca. This likely suggests that the analysis area is just below the poverty threshold rather than significantly below it.

According to personal communication between the City of Winnemucca and SPB Utility Services, Inc. (Pers. Comm., Linda Peterson with SPB Utility email to Steve West of City of Winnemucca, December 1, 2015), who operate two major wastewater facilities for Washoe County Community Services, similar to what is proposed by the City of Winnemucca. Both facilities have been in operation for 10 to 20 years; both facilities are located less than one half mile from residential and commercial properties; and both facilities have had no complaints on odor during the life of the facilities. Based on the fact that no complaints have occurred from facilities that are very similar to what is being proposed, no impacts from odor are expected from the facility.

The buildings, facility components, and facility lighting associated with the project may result in visual impacts within the analysis area. The EPMS detailed in Section 2.1.9 for dark sky resources requires all lighting to be shielded and directed in a manner that focuses direct light to the immediate work area rather than out toward the adjacent residential community. These EPMS would reduce impacts from lighting associated with the project. The project would be screened from the view of adjacent properties by the 6-foot high berms surrounding the perimeter of the RIBs, as well as the 8-foot fencing that surrounds the perimeter of the facility. Visibility of the project would be limited from the surrounding properties (Figure 4.1-1). Any lighting noticeable to nearby properties would be as point sources in the distance. Impacts from lighting to the low income population would not be disproportionate.

The EPM for noise, detailed in Section 2.1.9, requires that all pumps or structures housing pumps be fitted with sound-attenuating materials, which would reduce noise levels. The new

facility operations would occur in various enclosed facilities (e.g., headworks building, bioreactor system, sludge holding tanks and sludge handling building, scum boxes, and effluent boxes). As a result, the new facility would have little discernable associated noises.

#### *No Action Alternative*

The existing facility would remain operational at its current location. There would be no impacts to communities within the analysis area above current baseline conditions.

#### 4.1.3 Floodplains

The analysis area for floodplains consists of the existing and proposed portions of the project area remaining within the 100 year floodplain. Figure 3.5-1 shows the mapped regulatory floodplain within this area.

#### *Proposed Action*

The main components (including the RIBs) associated with the wastewater treatment facility would be located out of the floodplain. The pivot irrigation with diluted treated effluent would be outside the floodplain. The majority of the influent pipeline would be located outside the floodplain, but a short length would be within the floodplain, as would the IPS. Construction of these facilities in the floodplain would be within already disturbed areas and are not likely to affect floodplain function. Neither the IPS nor the first segment of the influent pipeline would be located within the defined floodway, thus there would be no change or displacement to its boundaries. As the existing wastewater treatment facility is decommissioned, accumulated sludge in the lagoons would be removed from the floodplain and hauled to the landfill.

#### *No Action Alternative*

There would be no change to the extent and type of facilities and pollutants associated with the existing wastewater treatment facility that occur within the floodplain. The presence of the existing wastewater treatment facility in the floodplain has caused concern from the EPA and NDEP, and would lead to non-compliance violations. Their concerns relate to the potential for loading of pollutants associated with treated or untreated effluent and sludge to the Humboldt River during floodplain inundation.

#### 4.1.4 Human Health and Safety

The project area was selected for the analysis area.

#### *Proposed Action*

Prior to conveyance of title, the abandoned domestic well within section 28 would be properly capped. No remaining impacts are expected.

### *No Action Alternative*

The abandoned well would remain an open avenue to groundwater pollution and potentially a human health hazard.

#### 4.1.5 Migratory Birds

The analysis area for migratory birds is the project area. Direct impacts to migratory birds could include mortality and loss of habitat. Indirect impacts could result from displacement due to construction activities. The analysis utilizes the habitat evaluation and biological baseline report (Stantec, 2015b). As presented in Section 2.1.9, project activities disturbing potential migratory bird nesting habitat (i.e., vegetation cover) would be timed to occur outside the bird nesting season (March 1 to August 31). When habitat disturbance during the nesting season is unavoidable, the habitat would be surveyed for nesting birds prior to any impacts occurring. If nesting birds are found, areas within a 260-foot radius of the nest site would be buffered from disturbance until the young have fledged the nest.

### *Proposed Action*

The potential direct impacts to migratory bird species include the loss of approximately 612 acres (142 acres for treatment facility and RIBs and 470 acres for reuse pivots) of potentially suitable nesting and foraging habitat. The construction of the treatment facility would permanently disturb 142 acres, which would no longer be suitable habitat for migratory birds. The construction of the reuse pivots would ultimately convert 227 acres of the Annual Grasses vegetation community and 244.4 acres of Dunes with Annual Grasses and Invasive Weeds vegetation community to agriculture, specifically alfalfa. The reuse pivot fields may be utilized by migratory birds for foraging, although the crop removal would deter use for nesting habitat. The stationary portions of the pivot structure may be utilized by migratory birds for nesting and perching. Alfalfa harvest could displace migratory birds if roosting or foraging within the reuse pivots, but would be unlikely to cause mortality since birds could easily fly out of the way of harvest machinery.

### *No Action Alternative*

No impacts to migratory birds would be expected under the No Action Alternative.

#### 4.1.6 Water Quality (Surface and Ground)

*As identified in Table 3.1-1, only groundwater is affected.*

The area of analysis for potential groundwater effects coincides with the Winnemucca Segment Subbasin (Figure 3.8-1). The Proposed Action could potentially affect alluvial groundwater quality. This potential is assessed below, by comparing predicted likely conditions to the baseline condition that includes the existing wastewater treatment facility.

### *Proposed Action*

The wastewater treatment facility RIBs would be located further away (between 50 and 100 feet at the new facility [NDWR, 2015b] versus 8 to 18 feet at the existing facility [NDEP, 2010]) from groundwater (more vertical separation between the surface and the average depth to groundwater) and surface water (horizontally - 1.2 miles from the Humboldt River). Based on soil descriptions, the effluent would be expected to move vertically to a greater degree than laterally. These factors would allow dispersion and dilution before the effluent reaches other groundwater wells or interacts with the Humboldt River.

The use of the treated effluent, diluted with well water, for irrigation in the reuse pivots would result in similar effects as disposal in RIBs. A separate set of shallow monitoring wells would ensure that pollutants would not enter groundwater. This aspect of the Proposed Action would enable another means of disposal of treated effluent, while reducing the need to expand the RIB capacity.

### *No Action Alternative*

Under the No Action Alternative, the existing wastewater treatment facility would continue to represent a risk to shallow groundwater quality during a breach or other upset, due to the aquifer's interrelationship with the Humboldt River and its close proximity (500 feet away). This risk would increase as the plant ages and reaches its design life. Also, at the existing location, EPA and NDEP would continue to have concerns with the City of Winnemucca's ability to operate the wastewater treatment facility while ensuring that groundwater was protected.

#### 4.1.7 Wetlands and Riparian Zones

The analysis area for wetlands and riparian areas is the portion of the project that lies in or adjacent to mapped wetlands (Figure 3.9-1).

### *Proposed Action*

The majority of the facility would be located out of mapped wetlands. Pivot irrigation with diluted treated effluent would occur outside the mapped wetlands. The IPS and 2,057 feet of the influent pipeline would be located within mapped wetlands. These areas are disturbed and are not likely providing substantial wetland values and functions.

As the existing wastewater treatment facility is decommissioned and allowed to revegetate, there could be an increase in both amount and function of wetlands and riparian areas within its boundaries.

### *No Action Alternative*

There would be no change to the extent and type of facilities, activities, or pollutants associated with the existing wastewater treatment facility that occurs within mapped wetlands. As the current location of the wastewater treatment facility is within mapped wetlands and riparian area, nearby wetlands could be affected in the event of an effluent release.

#### 4.1.8 Lands and Realty

The analysis area for lands and realty is the project area.

### *Proposed Action*

The Proposed Action would convey 1,220 acres of BLM-administered land to the City of Winnemucca. These lands would no longer be managed for multiple uses.

There are 11 authorized ROWs within the R&PP boundary. The Proposed Action would disturb 668 acres (611.8 acres permanent; 56.2 acres temporary) for the construction of the treatment facility, associated infrastructure, and reuse pivots. This would include installation of the pipeline within the existing Humboldt County Road (Old Jungo/Jungo Road) ROW and along other utility ROWs. Excavation/encroachment permits are required from the Humboldt County Road Department for any encroachment in a county road easement or ROW. Further, a boring permit would be obtained from the Union Pacific Railroad to install the pipeline beneath the railroad. Coordination with existing ROW holders would prevent conflicts. Some traffic disruption would occur during construction of the pipeline. Examples of potential traffic disruption include temporary delays due to lane closures for safety of construction personnel, reduction of speed in the construction zone, and possible changes in traffic patterns. No traffic disruption is expected during construction of the treatment facility or RIBs.

The R&PP patent, if issued, would be subject to the existing ROWs in the project area. Letters have been sent to each ROW holder discussing various options and procedures to include: an easement from the City of Winnemucca, maintaining the ROW under its current terms and conditions (including expiration date – status quo), or requesting their ROW in perpetuity.

### *No Action Alternative*

Land use in the project area would not change under the No Action Alternative; therefore, no impacts to ROW holders and land use would be expected.

#### 4.1.9 Social and Economic Values

The analysis area for social and economic values consists of the City of Winnemucca and Census Tract 105 which includes the project area and western and northern Humboldt County (Figure 3.11-1).

##### *Proposed Action*

The facility design, which incorporates Project EPMs, would reduce impacts to the surrounding residential communities. Potential impacts were evaluated in terms of increases in employment, population, changes to public services, and changes to revenues or taxes. Direct impacts from the project would result from the employment of a temporary workforce during construction, as well as the employment of a permanent workforce during the operation and maintenance of the wastewater treatment facility. The City of Winnemucca anticipates four full-time employees at the new facility, which includes the three staff currently employed at the existing facility and one additional full-time staff. The City of Winnemucca also anticipates contracting with an engineering consultant to provide facility oversight during operation and maintenance of the new facility. The project would temporarily employ 10 to 15 personnel onsite during construction operations, and temporary employment may increase to approximately 50 people during construction operations, if necessary. A local workforce from the City of Winnemucca and/or Humboldt County would be utilized for construction and operation of the facility to the greatest extent possible. Employment during construction would be a direct economic impact to Humboldt County and the City of Winnemucca in the form of potential work opportunities in the construction industry and by providing wages inside Humboldt County and for the residents of the City of Winnemucca.

The project would not create any noticeable population increase or housing demand within the analysis area. The project is the result of EPA and NDEP environmental concerns and the need to accommodate future growth within the City of Winnemucca, but the project would not be driving population growth. During construction, the project may result in the temporary use of various rental housing and/or hotel accommodations for construction personnel. This would be on a small scale and would last during construction. As a result, the project would have no impacts on population and housing within the analysis area.

The project would not create noticeable increases in demand for community facilities and services such as education, public safety, and health care, and any increase would occur only during construction operations. No impacts are anticipated from the operation and maintenance beyond baseline conditions at the existing facility.

The project may have direct impacts on utility services and demand. Water use associated with the proposed project would be from existing water rights held by the City of Winnemucca. The facility would change the point of diversion under existing groundwater rights. The City of Winnemucca sewer fees have been and would continue to be impacted by the project. Prior to March 2015, sewer fees were \$21.00 per month per household. To fund the project, a city ordinance was passed to increase sewer fees. The first increase was in March of 2015, from \$21.00 to \$30.00 per month, followed by an increase on January 1, 2016 to \$39.70 per month per household. This represents an 89 percent increase in sewer fees from baseline (\$21.00). Although the increase is substantial, the cost associated with EPA fines would have a longer lasting impact on the City of Winnemucca and its residents.

The project is designed to accommodate future development and sewer connections within the City of Winnemucca. The project would allow for meeting future growth projections. Also, The project would have no noticeable impact to solid waste disposal demand within the analysis area. As noted in Section 4.1.2, no odors are expected from the facility.

The project would require a new transformer and backup generator to supply power to the new facility. The additional power requirements have been taken into account in the design of the proposed facility and the additional power needs are not expected to have any noticeable impacts within the analysis area.

The project may contribute to indirect impacts resulting from additional revenue and sales tax generated for local businesses and accommodation services from the purchase of goods, services, and accommodations during construction. The facility would be located within 1,000 to 5,000 feet of existing residential homes to the north and east. Section 4.1.2 discusses potential concerns regarding dark skies, noise, and odors from the project. The project may indirectly impact surrounding residential property values by locating a wastewater treatment facility in close proximity to these residential properties. As detailed in Section 3.4.3, the property values around the existing wastewater treatment facility are comparable to the property values throughout the City of Winnemucca and Humboldt County.

#### *No Action Alternative*

The current social and economic setting described in Section 3.11 would continue. The existing facility would remain within 1,000 feet of existing residential homes and adjacent to industrial development to the north. The No Action Alternative may have social and economic impacts within the analysis area because the City of Winnemucca would not be able to modernize the wastewater treatment disposal facility which may result in limited ability to accommodate future growth within the City of Winnemucca. The existing facility would remain operational at its

current location within the 100-year floodplain of the Humboldt River, which would result in financial impacts because the City of Winnemucca would continue to operate in noncompliance with the EPA, resulting in the City of Winnemucca being monetarily fined by the EPA.

#### 4.1.10 Visual Resources

The analysis area is the City of Winnemucca and those facilities in reasonably close proximity to the Project Area. To meet dark sky lighting guidelines (Dark Sky Society, 2009), lighting fixtures would be hooded and shielded, with lighting directed downward or onto the surface to be illuminated, which would minimize light emissions into the sky and intrusion on line-of-sight viewers (Section 2.1.9).

##### *Proposed Action*

As discussed in Section 2.1.2, the Proposed Action would include dusk to dawn automatic lighting on certain components of the facility. The 7 wall-mounted lights would each illuminate approximately 535 square feet, while the 8 pole-mounted lights would each illuminate approximately 2,960 square feet. The illuminated area from the 15 facility lights is 24,830 square feet (Figure 2.1-4). The nearest distance from a light fixture to the property line would be 1,900 feet (0.36 miles).

##### *No Action Alternative*

Lighting at the existing facility would remain and existing light pollution would continue. At night, the lighting at the existing facility is comprised of a single pole-mounted yard light. The fixture is not shielded, but it is sufficiently dim to be difficult to see from various locations around the facility. Near the existing plant there are two industrial facilities, each casting a fair amount of light into the dark sky. In contrast with the two industrial facilities, the light at the water treatment plant is small, dim, and, due in part to heavy vegetation around it, not easy to see from any of the main roads in the area.

## **4.2 Cumulative Impacts**

Impacts associated with past, present, and reasonably foreseeable future actions are generally created by ground or vegetation-disturbing activities that effect natural and cultural resources in various ways. Of particular concern is the *accumulation* of these impacts over time. This section of the EA considers the nature of the cumulative effect and analyzes the degree to which the Proposed Action and alternatives contribute to the collective impact.

Based on the conclusions made in the analysis of direct and indirect impacts, there would be no cumulative impacts on the following resources:

- Air Quality
- Environmental Justice
- Floodplains
- Human Health and Safety
- Lands and Realty
- Water Quality (Surface and Ground)
- Wetlands and Riparian Zones

#### 4.2.1 Cumulative Impacts

##### *Migratory Birds*

A 10 to 15 mile radius around the project area was considered in determining if there would be cumulative impacts to migratory bird habitat. Professional observations of migratory birds in the assessment area indicate that they tend to seek out areas with more available resources, such as the developed urban landscapes within the City of Winnemucca. While the proposed reuse pivots would provide a small amount of additional habitat, the project area is primarily invasive annual grassland resulting in no incremental impact to migratory bird habitat within the assessment area.

##### *Social and Economic Values*

In the case of social and economic values, the resulting cumulative impacts would be the same as those identified under the direct and indirect effect analysis for the Proposed Action and No Action Alternative.

##### *Visual Resources*

The contribution of this light source to the affected environment is small in comparison to existing contributors. Based on analysis of direct and indirect impacts and the professional judgment of the interdisciplinary team, the small contribution of this source to the affected environment would not be expected to create a cumulative impact under the Proposed Action and No Action Alternative.

## **5.0 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED**

### **5.1 Native American Consultation**

Project notification letters were mailed to the Winnemucca Indian Colony, the Battle Mountain Band, and the Lovelock Paiute Tribe on May 8, 2015. A notification letter was sent to the Reno-Sparks Indian Colony on June 8, 2015. These letters included a description of the project; several maps of the project area; and an invitation to ask questions, provide comments, and initiate official government-to-government consultation if desired. To date no questions, comments, or requests to consult have been received.

### **5.2 Coordination and/or Consultation (Agencies)**

Humboldt County

Nevada Department of Wildlife – Kenny Pirkle

### **5.3 Individuals and/or Organizations Consulted**

No specific coordination was necessary during the development of the EA.

### **5.4 Public Outreach/Involvement**

The Preliminary EA is being made available for public review.

## 6.0 LIST OF PREPARERS

BLM staff from the Winnemucca District Office and third-party contractor staff who contributed to this document are listed in the tables below.

**Table 6.0-1 Bureau of Land Management Preparers, Reviewers, and Technical Specialists**

<b>Name</b>	<b>Responsibility/Specialty</b>
Elise Brown	Migratory Birds   General Wildlife   Special Status Species   Threatened and Endangered Species
Robert Burton	Air Quality   Vegetation   Soils
Debbie Dunham	Lands and Realty
Robert Gibson	Water Quality   Wetlands and Riparian Areas   Floodplains
Morgan Lawson	Rangeland Management
Kurt Miers	Project Manager   Wastes, Solid and Hazardous   Human Health and Safety
Khatlyn Micheli	Technical Coordinator
Lynn Ricci	National Environmental Policy Act Compliance
Julie Suhr Pierce	Environmental Justice   Social and Economic Values
Mike Whalen	Noxious, Invasive, Non-Native Species
Matt Yacubic	Cultural Resources   Paleontological Resources

**Table 6.0-2 Third-Party Contractor – Stantec Consulting Services Inc.**

<b>Name</b>	<b>Responsibility</b>
Kim Carter	Technical Editor
Erica Freese, CPRM	Project Manager   Resource Specialist
Aaron Hoberg	Resource Specialist Air Quality
Jenni Prince-Mahoney	Resource Specialist
Steve Morton, AICP	Resource Specialist Social and Economic Values   Environmental Justice   Cumulative Effects Analysis
Christine Johnson	GIS Specialist
Karla Knoop	Resource Specialist Water Quality   Wetlands and Riparian Areas   Floodplains
Kristi Schaff	Senior Review

## 7.0 REFERENCES

- Bureau of Economic Analysis (BEA). 2015a. Personal Income by Major Component and Earnings by NAICS Industry 1/County (CA5N). Retrieved economic data for years 2010-2013 on October 2015, multiple days from <http://www.bea.gov/itable/index.cfm>
- Bureau of Economic Analysis (BEA). 2015b. Total Full-Time and Part-Time Employment by NAICS Industry 1/County (CA25N). Retrieved economic data for year 2013 on October 2015, multiple days from <http://www.bea.gov/itable/index.cfm>
- Bureau of Land Management (BLM) 2007. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. Programmatic Environmental Impact Statement. US Department of the Interior, Available online: [http://www.blm.gov/wo/st/en/prog/more/veg\\_eis.html](http://www.blm.gov/wo/st/en/prog/more/veg_eis.html)
- Bureau of Land Management (BLM). 2015a. Record of Decision and Resource Management Plan for the Winnemucca District Planning Area. U.S. Bureau of Land Management, Winnemucca District, Winnemucca, Nevada. BLM/NV/WN/ES/13-11+1793.
- Bureau of Land Management (BLM). 2015b. Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northwestern California, Oregon, Utah. U.S. Department of the Interior, Bureau of Land Management, Washington, D.C. September 2015.
- Carollo. 2014. Wastewater Treatment and Effluent Disposal Facilities Plan. City of Winnemucca, Nevada. Carollo Project No. 9303a00. Final. August 2014.
- City of Winnemucca. 2014. Independent Auditor's Report for Year Ending June 30, 2014. Prepared by Drake Rose and Associates, LLC for the City of Winnemucca. Retrieved on October 2015, multiple days from: <http://www.winnemuccacity.org/CityClerk/Treasurer.cfm>
- Dark Sky Society. 2009. Guidelines for Good Exterior Lighting Plans. Retrieved December 1, 2015 from: <http://www.darkskysociety.org/handouts/LightingPlanGuidelines.pdf>
- Federal Emergency Management Agency (FEMA). 2015. National Flood Hazard Layer. Online web map accessed on November 3, 2015 from: <http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30&extent=-117.79541615917961,40.94055251330535,-117.6759398408204,41.0053563205536>
- Humboldt County. 2012. Humboldt County Regional Master Plan, 2012 Update. Retrieved on October 2015, multiple days from [http://www.hcnv.us/planning/master\\_plan.htm](http://www.hcnv.us/planning/master_plan.htm)

- Humboldt County Comptroller. 2014. Independent Auditor's Report for the Year Ending June 30, 2014. Retrieved on October 2015, multiple days from:  
<http://www.hcnv.us/comptroller/comptroller.htm>
- Humboldt County School District (HCSD). 2015a. Retrieved on October 2015, multiple days from: <http://www.hcsdnv.com/district>
- Humboldt County School District (HCSD). 2015b. 2014-2015 District Accountability Report (Nevada Report Card) (Humboldt County). Retrieved on October 2015, multiple days from: <http://www.nevadareportcard.com/di/>
- Humboldt General Hospital (HGH). 2015. Retrieved on October 2015, multiple days from: <http://www.hghospital.org/>
- Natural Resources Conservation Service (NRCS). 2015. Custom Soil Resource Report for Humboldt County, Nevada, East Part. Retrieved November 4, 2015 for Project Area from Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- Nevada Department of Employment, Training and Rehabilitation (NDETR). 2015. Nevada Workforce Informer. Retrieved on October 2015, multiple days from:  
<http://www.nevadaworkforce.com/cgi/dataanalysis/AreaSelection.asp?tableName=Laborce>
- Nevada Division of Environmental Protection (NDEP). 2010. Fact Sheet, pursuant to NAC 445A.236, for City of Winnemucca, Permit Number NEV40037. March 2010.
- Nevada Division of Environmental Protection (NDEP). 2012. Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2030.
- Nevada Division of Water Resources (NDWR). 2005. Well Driller's Report for Log No. 101474, Notice of Intent No. 55650.
- Nevada Division of Water Resources (NDWR). 2015a. Hydrographic Area Summary, Area No. 070, Winnemucca Segment. Accessed online on October 27, 2015 from:  
<http://water.nv.gov/data/underground/printableSummary.cfm?basin=070&CFID=2910206&CFTOKEN=5f5a1dca6d77d20f-4E938A14-A799-5342-C41CECB0855B9BA4>
- Nevada Division of Water Resources (NDWR). 2015b. Well Log Database Query Tool. Accessed online on October 28, 2015 from: <http://water.nv.gov/data/welllog/>
- Nevada State Demographer's Office. 2014. Governor Certified Population Estimates of Nevada's Counties, Cities and Towns 2000 to 2014. Estimates from NV Department of Taxation and NV State Demographer, University of Nevada Reno. Retrieved on October 2015, multiple days from: <http://nvdemography.org/>

- Nevada State Demographer's Office. 2015. Population Projections for Nevada's Counties 2015 to 2019. Nevada State Demographer's Office Based on 2014 Estimates. Retrieved on October 2015, multiple days from: <http://nvdemography.org/>
- Nevada State Office of Rural Health. 2015. Nevada Rural and Frontier Health Data Book- Seventh Edition. Prepared by Tabor Griswold, PhD, John Packham, PhD, Laima Etchegoyhen, MPH, and Christopher Marchand, MPH, University of Nevada School of Medicine. January 2015.
- Pezonella Associates Inc. (Pezonella). 2014. Phase 1 Environmental Site Assessment, Vacant Land on Jungo Road and Cyanco Drive, Humboldt County Parcel Numbers 3637-28-100-001 and 3637-32-100-001, near Winnemucca, Nevada. Prepared for City of Winnemucca. June 17, 2014.
- Pezonella Associates Inc. (Pezonella). 2015. Geotechnical Investigation, Proposed Wastewater Treatment and Effluent Disposal Facilities, Winnemucca, Humboldt County, Nevada. March 23, 2015.
- Stantec Consulting Services Inc. (Stantec). 2015a. Air Quality Analysis for the Winnemucca R&PP Environmental Assessment. Prepared December 2015.
- Stantec Consulting Services Inc. (Stantec). 2015b. Habitat Evaluation and Biological Baseline Report, 2015 Calendar Year. Prepared for City of Winnemucca and Bureau of Land Management. October 9, 2015.
- Stantec Consulting Services Inc. (Stantec). 2015c. Wastewater Treatment Facility Improvements Preliminary Storm Water Pollution Prevention Plan. December 2015.
- Stukenholtz Laboratory, Inc. 2012. Irrigation Water Analysis for Simplot Grower Solutions, Report No. 58654. September 19, 2012.
- U.S. Census Bureau. 2000. Profile of General Demographic Characteristics: 2000. Census 2000 Summary File 2 (SF 2) 100-Percent Data (DP-1) for Census Tract 105, Humboldt County, Nevada. Retrieved on October 2015, multiple days from: <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- U.S. Census Bureau. 2008. A Compass for Understanding and Using American Community Survey Data: What General Data Users Need to Know. United States Government Printing Office: Washington, D.C.
- U.S. Census Bureau. 2010. Profile of General Population and Housing Characteristics: 2010 Census Summary File 2 (DP-1) for Humboldt County, the City of Winnemucca and Census Tract 105. Retrieved on October 2015, multiple days from <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

- U.S. Census Bureau. 2011. 2010 Census Summary File 1 [Nevada]. United States Department of Commerce, United States Census Bureau.
- U.S. Census Bureau. 2012. How the Census Bureau Measures Poverty. Retrieved on November 5, 2015 from:  
<http://www.census.gov/hhes/www/poverty/about/overview/measure.html>
- U.S. Census Bureau. 2013a. Vacancy Status. Vacant Housing Units 2009-2013 American Community Survey 5- Year Estimates (B25004) for Humboldt County, the City of Winnemucca and Census Tract 105. Retrieved on October 2015, multiple days from:  
<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- U.S. Census Bureau. 2013b. Average Household Size of Occupied Housing Units by Tenure. Occupied Housing Units 2009-2013 American Community Survey 5-year Estimates (B25010) for Humboldt County, the City of Winnemucca and Census Tract 105. Retrieved on October 2015, multiple days from:  
<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- U.S. Census Bureau. 2013c. Median Contract Rent (Dollars). Renter-Occupied Housing Units Paying Cash Rent 2009-2013 American Community Survey 5-Year Estimates (B25058) for Humboldt County, the City of Winnemucca and Census Tract 105.
- U.S. Census Bureau. 2013d. Selected Housing Characteristics. 2009-2013 American Community Survey 5- Year Estimates (DP04) for Humboldt County, the City of Winnemucca and Census Tract 105. Retrieved on October 2015, multiple days from:  
<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- U.S. Census Bureau. 2013e. Selected Economic Characteristics. 2009-2013 American Community Survey 5-Year Estimates (DP03). for Humboldt County, the City of Winnemucca and Census Tract 105. Retrieved on October 2015, multiple days from:  
<http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- U.S. Census Bureau. 2014. 2009-2013 American Community Survey 5-Year Estimates [Nevada]. United States Department of Commerce, United States Census Bureau.
- U.S. Climate Data. 2015. U.S. Climate Data for Winnemucca, Nevada. Accessed multiple days in July 2015 at: <http://www.usclimatedata.com/climate/winnemucca/nevada/united-states/usnv0101>
- United States Environmental Protection Agency (EPA). 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses. United States Environmental Protection Agency: Washington, DC.
- United States Environmental Protection Agency (EPA). 2015a. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013. April 15, 2015. Available online at:  
<http://www3.epa.gov/climatechange/ghgemissions/usinventoryreport.html>

United States Environmental Protection Agency (EPA). 2015b. Environmental Justice. Retrieved on April 28, 2015, from: <http://www.epa.gov/environmentaljustice/>

United States Fish and Wildlife Service (USFWS). 2015. National Wetlands Inventory. Online Mapper accessed November 3, 2015 from: <http://www.fws.gov/wetlands/data/mapper.HTML>

United States Geological Survey (USGS). 1966. Water in the Humboldt River Valley Near Winnemucca, Nevada. Water-Supply Paper 1816. Prepared in Cooperation with the Nevada Department of Conservation and Natural Resources. A Summary of the Water-Resources Studies of the Interagency Humboldt River Research Project in the Winnemucca Area.

Zillow.com (Zillow). 2015. Real Estate, Apartments, Mortgages, and Home Values. Accessed November 2015, multiple days from: <http://www.zillow.com/>

## 8.0 FIGURES

