APPENDIX C
REGULATORY REVIEW INFORMATION

Appendix C

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BOWIE POWER STATION
APPLICABLE REQUIREMENTS[a]

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Permit Application Processing Procedures Certification of Truth, Accuracy, and Completeness R18-2-304(H)	Submit a certification by a responsible official of the truth, accuracy, and completeness with any application form, report, or compliance certification. State in the certification that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.	Certifications will be submitted as required with reports and compliance certifications.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Reporting Requirements R18-2-310(01)(A)	Report to the Director any emissions in excess of the limits established by Chapter 2 or the applicable permit. The report shall be in two parts: (1) Notification by telephone or facsimile within 24 hours of the time the owner or operator first learned of the occurrence of excess emissions that includes all available information from subsection (B). (2) Detailed written notification by submission of an excess emissions report within 72 hours of the notification under subsection (1).	Reports will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Performance Tests R18-2-312(A)	Conduct performance tests and furnish the Director a written report of the results of the test within 60 days after the source achieves the capability to operate at its maximum production rate on a sustained basis, but no later than 180 after initial start-up and at such other times as may be required by the Director.	Performance tests will be conducted as required. Written reports will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Performance Tests R18-2-312(B)	Conduct performance tests and reduce data in accordance with the test method and procedures contained in the Arizona Testing Manual unless the Director specifies or approves: (1) a reference method with minor changes in methodology; (2) an equivalent method; (3) an alternative method; or (4) waives the performance test requirement because the source has demonstrated by other means to the Director that it is in compliance.	Performance tests will be conducted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Performance Tests R18-2-312(C)	Conduct performance tests under such conditions as specified by the Director based on representative performance. Make available to the Director such records, as may be necessary, to determine the conditions of the performance tests. Operations during startup, shutdown, and malfunction shall not constitute representative conditions of performance tests unless otherwise specified in the applicable standard.	Performance tests will be conducted as specified. Records will be made available as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Performance Tests R18-2-312(D)	Notify the Director two weeks prior to the performance test.	Notification will be submitted as required.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Performance Tests R18-2-312(E)	Provide performance testing facilities as follows: (1) Sampling ports adequate for applicable test methods; (2) safe sampling platform(s); and (3) utilities for sampling and testing equipment.	Performance testing facilities will be provided as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Posting of Permit R18-2-315(A)	Post permit or a certificate of permit issuance on location where the equipment is installed for which an individual or general permit is issued in such manner as to be clearly visible and accessible. All equipment covered by the permit shall be clearly marked with one of the following: (1) the current permit number; and (2) the serial number or other equipment number that is also listed in the permit to identify the piece of equipment.	Permit will be posted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Posting of Permit R18-2-315(B)	Keep a copy of the complete permit on site.	A copy of the permit will be kept at the facility.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Fees Related to Individual Permits R18-2-326(C)	Pay annual fees.	Annual fees will be paid.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Annual Emissions Inventory Questionnaire R18-2-327(A)	Complete and submit to the Director an annual emissions inventory questionnaire. The questionnaire is due by March 31 or 90 days after the Director makes the form available, whichever is later. Include emission information for the previous calendar year.	The annual emissions inventory questionnaire will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Annual Emissions Inventory Questionnaire R18-2-327(E)	Submit an amendment to an annual emission inventory questionnaire to the Director, containing the documentation required by subsection (B)(3), whenever it is discovered or notice is received, within two years of the original submittal, that incorrect or insufficient information was submitted to the Director by a previous questionnaire.	Amendments will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 72 72.9(c)	Hold allowances for the turbines in the source's compliance account not less than the total annual emissions of sulfur dioxide from the turbines.	Allowances will be obtained and held.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 72 72.9(f)	Keep on the site the following Acid Rain Program documents: ▸ Certificate of Representation for the designated representative and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation; ▸ All emissions monitoring information in accordance with 40 CFR 75; ▸ Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and ▸ Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.	Documents will be maintained at the facility as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 72 72.21(a)	The designated representative must submit, sign, and certify each submission under the Acid Rain Program.	Acid Rain Program submissions will be signed and certified by the designated representative.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.4(b)(2)	Ensure that all monitoring systems required under the Acid Rain Program for sulfur dioxide, oxides of nitrogen, and volumetric flow are installed and all certification tests are completed not later than the earlier of 90 unit operating days or 180 calendar days after the date the turbines commence commercial operation, and notice must be provided under 40 CFR Part 75, Subpart G.	Required Acid Rain Program monitoring systems will be installed and certified.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.5(b)	Do not operate a turbine without complying with the requirements of 40 CFR 75.2 through 75.75 and Appendices A and G of 40 CFR 75.	Turbines will be operated properly.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.5(c)	Do not use an alternative monitoring system for Acid Rain Program Compliance without first obtaining permission.	If an alternative monitoring system will be used, permission will be obtained as required.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.5(d)	Do not operate a turbine so as to discharge or allow to be discharged emissions of sulfur dioxide, oxides of nitrogen, or carbon dioxide without accounting for all emissions in accordance with 75.10 through 75.66.	Turbines will be operated properly.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.5(e)	Do not disrupt any continuous emission monitoring system or any portion thereof or any other approved emission monitoring method and thereby avoid monitoring sulfur dioxide, oxides of nitrogen, or carbon dioxide emissions as required by the Acid Rain Program except for periods of recertification, or periods when calibration, quality assurance, or maintenance is performed pursuant to 75.21 and Appendix B of 40 CFR 75.	Monitoring systems will only be disrupted as allowed.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.5(f)	Do not retire or permanently discontinue use of the continuous monitoring system, any component thereof, or any other approved emissions monitoring system required under the Acid Rain Program except under listed circumstances.	Continuous monitoring systems will be operated as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(a)(1)	Install, certify, operate, and maintain a sulfur dioxide continuous emission monitoring system and a flow monitoring system on the turbine exhausts, unless using an alternate method as specified in 75.11(d).	Sulfur dioxide emissions will be determined either using a continuous emission monitoring system or with an alternate method as specified in 75.11(d).
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(a)(2)	Install, certify, operate, and maintain oxides of nitrogen-diluent continuous emission monitoring systems on the turbine exhausts.	The required monitoring systems will be installed, certified, operated, and maintained as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(a)(3)	Determine turbine carbon dioxide emissions using one of the methods specified.	Carbon dioxide emissions will be determined using a specified method.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(b)	Ensure that each continuous emission monitoring system required by the Acid Rain Program meets the equipment, installation, and performance specifications in Appendix A of 40 CFR 75 and is maintained according to the quality assurance and quality control procedures in Appendix B of 40 CFR 75 and record sulfur dioxide and oxides of nitrogen emissions in the appropriate unit of measurement (i.e., lb/hr for sulfur dioxide, and lb/MMBtu for oxides of nitrogen).	Continuous emission monitoring systems will meet specified requirements.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(c)	Determine and record the heat input rate, in units of MMBtu/hr, to each turbine for every hour or part of an hour any fuel is combusted.	Turbine heat input will be determined and recorded.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(d)	Operate all Acid Rain Program required continuous emission monitoring systems at all times that the turbines combust any fuel, except as specified, and in accordance with the applicable subparagraphs.	Required continuous emission monitoring systems will be operated except as specified.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.10(d)(1)	Ensure that the Acid Rain Program continuous emission monitoring systems meet the listed operational requirements.	Continuous emission monitoring systems will meet the applicable operational requirements.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.11(d)	Determine sulfur dioxide emissions from the turbines using one of the methods specified for gas-fired units.	Sulfur dioxide emissions from the turbines will be determined using one of the specified methods.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.12	Meet the operating requirements for oxides of nitrogen continuous emission monitoring systems for the turbines.	Oxides of nitrogen continuous emission monitoring systems will meet the applicable operating requirements.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.13	Meet the requirements for the option chosen for determining carbon dioxide emissions from the turbines.	The requirements for determining carbon dioxide emissions will be met.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.20(a)	Ensure that each continuous monitoring system required by the Acid Rain Program meets the initial certification requirements and ensure that all applicable initial certification tests under 75.20(c) are completed by the specified deadlines and prior to use.	The initial certification requirements will be met by the specified deadlines.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.20(a)(1) and 75.61(a)(1)	Submit a written notice of the dates of initial certification testing of Acid Rain Program continuous monitoring systems.	Written notices will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.20(a)(2) and 75.60(b)(1)and (2)	Apply for certification of each Acid Rain Program continuous emission monitoring system.	Applications for certifications will be submitted.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.21	Operate, calibrate, and maintain each Acid Rain Program continuous emission monitoring system in accordance with the specified quality assurance and quality control requirements.	Each Acid Rain Program continuous emission monitoring system will be operated, calibrated, and maintained in accordance with the applicable quality assurance and quality control requirements.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.21(d)	Submit written notices of the dates of relative accuracy testing of Acid Rain Program continuous emission monitoring systems.	Written notices will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.22	Use the specified test methods for certification and recertification of Acid Rain Program continuous emission monitoring systems.	Specified test methods will be used for certifications.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.30	Provide, when necessary, substitute data in accordance with the specified missing data procedures for Acid Rain Program continuous emission monitoring systems.	Substitute data will be provided when necessary.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.53(a)(2)	Prepare and maintain Acid Rain Program Monitoring Plans.	Acid Rain Program Monitoring Plans will be prepared and maintained.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.57 and 75.58	Maintain in a form suitable for inspection all measurements, data, reports, and other information required by the Acid Rain Program.	Records will be maintained as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.59(a)	Maintain for Acid Rain Program continuous monitoring systems the specified certification, quality assurance, and quality control records.	Certification, quality assurance, and quality control records will be maintained.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.60(b)(3)	Submit Acid Rain Program Monitoring Plans.	Acid Rain Program Monitoring Plans will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.60(b)(4)	Submit Acid Rain Program Electronic Quarterly Reports.	Quarterly reports will be submitted.
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.61(a)(2)	Submit dates when turbines will commence commercial operation.	Dates will be submitted.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Acid Rain R18-2-333(A) and 40 CFR 75 75.61(a)(5)	Submit written notice of the dates of periodic relative accuracy testing for Acid Rain Program continuous emission monitoring systems no later than 21 days prior to the first scheduled day of testing.	Written notices will be submitted.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Unlawful Open Burning R18-2-602(B)	Do not ignite, cause to be ignited, permit to be ignited, or suffer, allow, or maintain any open outdoor fire unless the fire is exempted from this requirement or receives a permit from ADEQ or a delegated authority.	Nonexempt open outdoor fires will not occur at the facility unless properly permitted.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Unlawful Open Burning R18-2-602(D)	A person conducting an open outdoor fire shall complete an ADEQ-approved application form and obtain a permit from ADEQ or a delegated authority unless exempted under R18-2-602(C).	A permit will be obtained prior to setting a nonexempt open outdoor fire.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Open Areas, Dry Washes or Riverbeds R18-2-604(A) and Roadways and Streets R18-2-605(A)	Conduct reasonable precautions to limit excessive amounts of particulate matter from becoming airborne. Keep dust and other types of air contaminants to a minimum by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, wetting agent, detouring, barring access, or other acceptable means.	Necessary precautions will be taken.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Open Areas, Dry Washes, or Riverbeds R18-2-604(A)	Do not cause, suffer, allow, or permit a building or its appurtenances, or a building, or a driveway, or a parking area to be constructed, used, altered, repaired, demolished, cleared, or leveled, or the earth to be moved or excavated, without taking reasonable precautions to limit excessive amounts of particulate from becoming airborne.	Reasonable precautions will be taken.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Roadways and Streets R18-2-605(A)	Do not cause, suffer, allow, or permit the use, repair, construction, or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne.	Reasonable precautions will be taken.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Roadways and Streets R18-2-605(B)	Do not cause, suffer, allow, or permit transportation of materials likely to give rise to airborne dust without taking reasonable precautions, such as wetting, applying dust suppressants, or covering the load, to prevent particulate matter from becoming airborne.	Reasonable precautions will be taken.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Roadways and Streets R18-2-605(B)	Remove from paved streets earth or other material that is deposited by trucking or earthmoving equipment.	Any materials deposited by trucks or earthmoving equipment on paved streets will be removed.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Material Handling R18-2-606	Do not cause, suffer, allow, or permit crushing, screening, handling, transporting, or conveying of materials or other operations likely to result in significant amounts of airborne dust without taking reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods to prevent excessive amounts of particulate matter from becoming airborne.	Reasonable precautions will be taken.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Storage Piles R18-2-607(A)	Do not cause, suffer, allow, or permit organic or inorganic dust producing material to be stacked, piled, or otherwise stored without taking reasonable precautions such as chemical stabilization, wetting, or covering to prevent excessive amounts of particulate matter from becoming airborne.	Reasonable precautions will be taken.
Arizona Administrative Code, Title 18, Chapter 2, Article 6 Emissions From Existing and New Nonpoint Sources Storage Piles R18-2-607(B)	At all times, operate stacking and reclaiming machinery at storage piles with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents, as to prevent excessive amounts of particulate matter from becoming airborne.	Machinery will be operated in such a manner as to prevent excessive amounts of particulate matter from becoming airborne.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards General Provisions R18-2-702(B)	Do not discharge from the auxiliary boiler and cooling tower any plume or effluent with opacity greater than 40%.	Auxiliary boiler will combust natural gas. Particulate matter emissions from natural gas combustion are small; opacity levels will be well below the limit. Visible plumes from the cooling towers will be composed of uncombined water. Visible emissions resulting from uncombined water do not constitute a violation [R18-2-702(C)].
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment R18-2-724(C)(1)	Do not emit particulate matter from the auxiliary boiler in excess of the amounts calculated by the following equation: $E = 1.02Q^{0.769}$ where: E = the maximum allowable particulate matter emission rate in pounds-mass per hour. Q = the heat input in MMBtu/hr.	The auxiliary boiler particulate matter emission rate of 0.35 lb/hr is well below the 20.7 lb/hr limit that results from the equation.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(D)	Do not emit gaseous or odorous materials from equipment, operations, or premises in such quantities or concentrations as to cause air pollution.	Gaseous or odorous emissions will not be emitted in such quantities as to cause air pollution.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(F)	Process, store, use, and transport materials including solvents or other volatile compounds, paints, acids, alkalies, pesticides, fertilizers, and manure in such a manner and by such means that they will not evaporate, leak, escape, or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage, or discharge, the installation and use of such control methods, devices, or equipment shall be mandatory.	Materials will be processed, stored, used, and transported as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(a)(1)	Submit written notification of the date construction of the turbines/duct burners is commenced no later than 30 days after such date.	Written notification will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(a)(3)	Submit written notification of the actual dates of initial startup of turbines/duct burners and auxiliary boiler postmarked within 15 days after such dates.	Written notification will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(a)(4)	Submit written notification of any physical or operational change to turbines/duct burners or auxiliary boiler that may increase the emission rate of any pollutant to which the standard applies (unless specifically exempt) postmarked 60 days or as soon as practical before the change is commenced.	Written notification will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(a)(5)	Submit written notification of the date upon which demonstration of the turbine/duct burner continuous monitoring system performance commences postmarked not less than 30 days prior to such date.	Written notification will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(b)	Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the turbines , duct burners, or auxiliary boiler.	Records will be maintained as required.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(c)	Submit excess emissions and monitoring systems performance reports and/or summary report forms semiannually, except when more frequent reporting is specifically required. Reports shall be postmarked by the 30th day following the end of each six-month period.	Reports will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.7(f)	Maintain a file for two years following the dates of all measurements, maintenance, reports, and records required by 40 CFR 60.	Records will be maintained as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.8(a)	Conduct performance tests for turbine oxides of nitrogen emissions and sulfur dioxide emissions from the turbines/duct burners and reduce data in accordance with test methods and procedures of 40 CFR 60 within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after initial startup of facility.	Performance tests will be conducted as specified.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.8(d)	Submit notification at least 30 days prior to any performance test required by 40 CFR 60.	Notification will be submitted as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.11(d)	Maintain and operate the turbines and duct burners at all times, including periods of startup, shutdown, and malfunction in a manner consistent with good air pollution control practices for minimizing emissions.	Turbines and duct burners will be properly operated and maintained.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards General Provisions R18-2-901(1) and 40 CFR 60, Subpart A 60.12	Do not conceal an emission from the turbines or duct burners that would otherwise constitute a violation with a standard of 40 CFR 60.	Excess emissions that could violate a standard of 40 CFR 60 will not be concealed.

Citation and Title	Requirement	Compliance
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units R18-2-901(5) and 40 CFR 60, Subpart Dc 60.48c(g)	Record the amount of fuel combusted daily or monthly in the auxiliary boiler, or record the total amount of natural gas delivered to the Bowie Power Station for the auxiliary boiler each calendar month.	Records will be maintained as required.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for Storage Vessels for Petroleum Liquids R18-2-905(1)	Any petroleum liquid storage tank of less than 40,000 gallons (151,412 liters) capacity shall be equipped with a submerged filling device or acceptable equivalent as determined by the Director for the control of hydrocarbon emissions.	Storage tanks of less than 40,000 gallons (151,412 liters) capacity will be equipped with a submerged filling device or acceptable equivalent as determined by the Director.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for Storage Vessels for Petroleum Liquids R18-2-905(3)	All pumps and compressors that handle volatile organic compounds shall be equipped with mechanical seals or other equipment of equal efficiency to prevent the release of organic contaminants into the atmosphere.	All pumps and compressors will be equipped with mechanical seals or other equipment of equal efficiency.
Federal New Source Performance Standards Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60, Subpart IIII 60.4205(c), 60.4211(c)	Purchase a fire pump engine certified to meet the emission limits in Table 4 to 40 CFR 60, Subpart IIII and comply with those limits.	A certified engine will be purchased and emission limits will be met.
Federal New Source Performance Standards Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60, Subpart IIII 60.4206, 60.4211(a) and 60.4211(c)	Install, configure, operate, and maintain fire pump as specified or approved by manufacturer.	Fire pump will be installed, configured, operate, and maintained as specified or approved by manufacturer.
Federal New Source Performance Standards Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60, Subpart IIII 60.4207	Use diesel fuel in fire pump that meets requirements of 40 CFR 80.510(b) for nonroad diesel fuel.	Compliant diesel fuel will be used.
Federal New Source Performance Standards Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60, Subpart IIII 60.4209(a)	Install non-resettable hour meter on fire pump prior to startup of engine if the engine does not meet the standards applicable to non-emergency engines.	Non-resettable hour meter will be installed if necessary.

Citation and Title	Requirement	Compliance
Federal New Source Performance Standards Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60, Subpart IIII 60.4211(e)	Limit maintenance checks and readiness testing of fire pump to 100 hours per year.	Maintenance checks and readiness testing will be limited to 100 hours per year.
Federal New Source Performance Standards Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60, Subpart IIII 60.4214(b)	If fire pump engine is 2011 model year or later, and does not meet the emission limitations in 40 CFR 60, Subpart IIII for non-emergency engines of the same model year, record the time and reason for operation of the engine.	Records will be kept as required.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4320	Do not emit oxides of nitrogen from the turbines in excess of 15 parts per million at 15% oxygen or 54 nanograms per Joule (1.2 pounds per megawatt-hour) of useful output.	Turbine oxides of nitrogen emissions will not exceed 2.0 parts per million at 15% oxygen at normal operating loads.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4330	Do not emit from the turbines sulfur dioxide in excess of 110 nanograms per Joule (0.90 pounds per megawatt-hour) gross output. or Do not burn fuel with total potential sulfur emissions in excess of 26 nanograms per Joule (0.060 pounds sulfur dioxide per MMBtu) heat input.	Emissions will be below the limits.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4333(a)	Operate and maintain combustion turbines, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.	Turbines, air pollution control equipment, and monitoring equipment will be operated at all times as required.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4340	Demonstrate compliance with oxides of nitrogen limits using one of the methods specified in 60.4340.	Compliance with oxides of nitrogen limits will be demonstrated using one of the specified methods.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4360, 60.4365, 60.4370	Monitor and record total sulfur in the natural gas fuel as specified in 60.4360 or Demonstrate that potential sulfur emissions from the fuel will not exceed 26 nanograms sulfur dioxide per Joule (0.060 pounds per MMBtu) using one of the methods specified in 60.4365.	Fuel sulfur will either be measured and recorded or the potential emissions will be demonstrated to be less than the limit as required.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4375(a)	Submit reports of excess emissions and monitor downtime in accordance with 60.7(c).	Excess emission and monitor downtime will be reported as required.

Citation and Title	Requirement	Compliance
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4375(b)	If annual performance tests are conducted in accordance with 60.4340(a), submit a written report of each performance test within 60 days following the completion of the performance test.	Reports will be submitted as necessary
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4400	Conduct an initial performance test for oxides of nitrogen emissions from the turbines/duct burners in accordance with 60.8, 60.4400, 60.4405, and 60.4410.	Required performance test will be conducted.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4415	Conduct an initial performance test for sulfur dioxide emissions from the turbines/duct burners in accordance with 60.8 and 60.4415.	Required performance test will be conducted.
Federal Hazardous Air Pollutants National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines 40 CFR 63, Subpart ZZZZ 63.6590(c)	For fire pump engine, comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII.	Fire pump engine will comply with 40 CFR 60, Subpart IIII requirements.
40 CFR 68 Chemical Accident Prevention Provisions	Submit a Risk Management Plan for aqueous ammonia storage and use.	Risk Management Plan will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.2(a)(1)	The annual GHG report must cover stationary fuel combustion sources and all applicable source categories listed in Table A-3 and Table A-4 of Part 98.	The annual GHG report will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.2(i)	Once a facility is subject to Part 98, the owner/operator must continue to comply, including submitting the annual GHG report, even if the facility no longer meets the applicability requirements in a future year.	The facility will comply with all applicable Part 98 requirements.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(a)	Follow the procedures for emission calculation, monitoring, quality assurance, missing data, recordkeeping, and reporting that are specified in each relevant subpart of Part 98.	The facility will comply with all applicable Part 98 requirements.
Federal Greenhouse Gas Reporting, 40 CFR Part 98, Subpart A, 98.3(b)	The annual GHG report must be submitted by March 31 of each calendar year for GHG emissions in the previous calendar year.	The annual GHG report will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(b)(2)	For a new facility beginning operation on or after January 1, 2010 that becomes subject to Part 98 in the year that it becomes operational, report emissions beginning with the first operating month and ending on December 31 of that year; subsequent annual reports must cover emissions for the calendar year (January 1 through December 31).	The annual GHG report will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(c)	The annual GHG report must contain the information specified in 40 CFR 98.3(c).	The annual GHG report will be submitted as required.

Citation and Title	Requirement	Compliance
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(e)	Use the emission calculation methodologies specified in the relevant Part 98 subparts, and use the same calculation methodology throughout a reporting period, unless a written explanation is provided of why a change in methodology was required.	GHG emissions will be calculated as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(g)	The facility must retain all required records for at least three years from the date of submission of the annual GHG report for the reporting year in which the record was generated.	The facility will retain all records as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(g)	Retain all records specified in 40 CFR 98.3(g), in addition to those records prescribed in each applicable Part 98 subpart.	The facility will retain all records as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.3(h)	The facility must submit a revised annual GHG report within 45 days of discovering that an annual GHG report that was previously submitted contains one or more substantive errors.	The facility will correct any substantive errors in a previously submitted report as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.4	One designated representative must be responsible to certify, sign, and submit GHG emission reports and other submissions for the facility.	The designated representative will perform all duties as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart A 98.5	Each GHG report and certificate of representation for the facility must be submitted electronically.	The GHG reports will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.41	The facility must report GHG emissions because it contains one or more electricity generating units and meets the requirements of 40 CFR 98.2(a)(1).	GHG emission reports will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.41	Report the annual mass emissions of carbon dioxide, nitrous oxide, and methane according to 40 CFR Part 98, Subpart D.	Mass emissions of carbon dioxide, nitrous oxide, and methane will be reported as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.42	Electricity generating units subject to the Acid Rain Program must report annual mass emissions of carbon dioxide, nitrous oxide, and methane per 40 CFR Part 98, Subpart D.	Mass emissions of carbon dioxide, nitrous oxide, and methane will be reported as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.43(a)	Continue to monitor and report carbon dioxide mass emissions as required by the Acid Rain Program.	Carbon dioxide mass emissions will be monitored and reported as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.43(a)(1)	Convert the cumulative annual carbon dioxide mass emissions reported in the fourth quarter electronic data report required under 40 CFR 75.64 from units of short tons to metric tons.	The fourth quarter cumulative annual carbon dioxide mass emissions will be converted to short tons.
Federal Greenhouse Gas Reporting 40 CFR Part 98, Subpart D, 98.43(a)(2) 40 CFR Part 98, Subpart C, 98.33(c)	Calculate and report annual nitrous oxide and methane emissions as specified in 40 CFR 98.33(c).	Annual nitrous oxide and methane emissions will be calculated and reported as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.44	Follow the applicable quality assurance procedures for carbon dioxide emissions in 40 CFR Part 75, Appendices B, D, and G.	The applicable quality assurance procedures from 40 CFR Part 75, Appendices B, D, and G will be followed for carbon dioxide.

Citation and Title	Requirement	Compliance
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.45	Follow the applicable missing data substitution procedures in 40 CFR Part 75 for carbon dioxide concentration, stack gas flow rate, fuel flow rate, high heating value, and fuel carbon content.	The applicable missing data substitution procedures in 40 CFR Part 75 will be followed for carbon dioxide
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.46	The annual GHG report must include the unit-level information specified in 40 CFR 98.36(d)(1).	The annual GHG report will be submitted as required.
Federal Greenhouse Gas Reporting 40 CFR 98, Subpart D 98.47	The facility will maintain records as specified in 40 CFR 98.3(g) and 40 CFR 98.37.	All records will be maintained as required.

[a] Does not include requirements associated with obtaining permits.

Notes:

CFR = Code of Federal Regulations
GHG = Greenhouse gas
lb/hr = Pounds per hour
lb/MMBtu = Pounds per million British thermal units
MMBtu/hr = Million British thermal units per hour

BOWIE POWER STATION
INSIGNIFICANT ACTIVITIES

- Diesel storage tank with a capacity of 500 gallons;
- Ten 2,000 gallon lube oil storage tanks.

BOWIE POWER STATION
INAPPLICABLE REQUIREMENTS

Arizona Administrative Code, Title 18, Chapter 2, Article 3 [R18-2-325(A)] allows the Director to include in permit determinations "that other requirements specifically identified are not applicable." The regulation goes on to state: "Any permit under this Chapter that does not expressly state that a permit shield exists shall not provide such a shield." Bowie Power Station, LLC requests a permit shield and that permit determinations identifying the following requirements as not applicable be included in the Class I permit for the Bowie Power Station.

Citation	Requirement	Inapplicability Statement
Arizona Administrative Code, Title 18, Chapter 2, Article 3 Permits and Permit Revisions Existing Source Emission Monitoring R18-2-313(C)	Existing fossil-fuel fired steam generators operated with an annual average capacity factor of greater than 30% must be monitored for opacity, nitrogen oxide emissions, sulfur dioxide emissions, and oxygen or carbon dioxide.	It is assumed that by the time construction commences on the Bowie Power Station, the federal New Source Performance Standards to which the turbines are subject will have been incorporated by reference into Article 9; therefore, the turbines will not be subject to an existing source performance standard. Auxiliary boiler will be operated with an annual average capacity factor of less than 30%.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards General Provisions R18-2-702(B)	Do not discharge from the turbines or fire pump any plume or effluent with opacity greater than 40%.	It is assumed that by the time construction commences on the Bowie Power Station, the federal New Source Performance Standards to which the turbines and fire pump are subject will have been incorporated by reference into Article 9.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Existing Fossil-fuel Fired Steam Generators and General Fuel-burning Equipment R18-2-703	All existing fossil-fuel fired steam generating units or general fuel burning equipment which are greater than or equal to 73 megawatts capacity must meet particulate matter, sulfur dioxide, and nitrogen oxides emission limits, and conduct monitoring and testing.	It is assumed that by the time construction commences on the Bowie Power Station, the federal New Source Performance Standards to which the turbines are subject will have been incorporated by reference into Article 9. Auxiliary boiler is not greater than 73 megawatts capacity.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Existing Stationary Rotating Machinery R18-2-719	Existing rotating machinery, including gas turbines, oil-fired turbines, and internal combustion engines, must comply with particulate matter, opacity, and sulfur dioxide limits.	It is assumed that by the time construction commences on the Bowie Power Station, the federal New Source Performance Standards to which the turbines and fire pump are subject will have been incorporated by reference into Article 9.

Citation	Requirement	Inapplicability Statement
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment R18-2-724(I)	Existing fossil-fuel fired industrial and commercial equipment with less than 73 megawatts capacity must install, calibrate, maintain, and operate a continuous monitoring system for measurement of opacity of emissions discharged into the atmosphere from the control device.	Auxiliary boiler is not equipped with a control device.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(A)(1)	Existing process sources not otherwise subject to standards of performance under Article 7 must meet particulate matter emission limits.	Project will not include process sources.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(A)(2) and (3)	Existing sources not otherwise subject to standards of performance under Articles 7, 9, or 11 must meet sulfur dioxide and nitrogen oxides emission limits.	It is assumed that by the time construction commences on the Bowie Power Station, the federal New Source Performance Standards to which the turbines and fire pump are subject will have been incorporated by reference into Article 9. Auxiliary boiler is subject to standards of performance under Article 7. Cooling towers and evaporation ponds do not emit either sulfur dioxide or nitrogen oxides.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(H)	Existing sources must not emit hydrogen sulfide in such concentrations so as to exceed 0.03 parts per million by volume for any averaging period of 30 minutes or more.	Project will not include sources with the potential to emit hydrogen sulfide.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(I)	Existing process sources must not emit carbon monoxide without complete secondary combustion of waste gases.	Project will not include process sources.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(J)	Existing sources must not emit hydrogen cyanide in such concentrations so as to exceed 0.3 parts per million by volume for any averaging period of eight hours.	Project will not include sources with the potential to emit hydrogen cyanide.

Citation	Requirement	Inapplicability Statement
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards Standards of Performance for Unclassified Sources R18-2-730(K)	Existing sources must not emit sodium cyanide dust or any other solid cyanide in such concentrations so as to exceed 140 micrograms per cubic meter for any averaging period of eight hours.	Project will not include sources with the potential to emit sodium cyanide dust.
Arizona Administrative Code, Title 18, Chapter 2, Article 7 Existing Stationary Source Performance Standards State Standards of Performance for Mercury Emissions from Coal-Fired Electric Steam Generating Units R18-2-734	Requires coal-fired electric generating plants to reduce inlet mercury by 90% or to achieve an emission limit of 0.0087 pounds per gigawatt-hour of electricity generated, whichever is greater.	Project will not include coal-fired electric generating units.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for New Stationary Sources Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978 R18-2-901(3) and 40 CFR 60, Subpart Da	Requires duct burners to comply with particulate matter, opacity, sulfur dioxide, and oxides of nitrogen performance standards for electric utility steam generating units commencing construction after September 18, 1978.	Does not apply to duct burners regulated under 40 CFR 60, Subpart KKKK.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for New Stationary Sources Industrial-Commercial-Institutional Steam Generating Units R18-2-901(4) and 40 CFR 60, Subpart Db	Comply with standards of performance for industrial-commercial-institutional steam generating units.	Does not apply to duct burners regulated under 40 CFR 60, Subpart KKKK.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units R18-2-901(5) and 40 CFR 60, Subpart Dc 60.42c, 60.43c, 60.44c, 60.45c, 60.46c, 60.47c, 60.48c(b), 60.48c(c), 60.48c(d), 60.48c(e), 60.48c(f)	Comply with standards of performance for small industrial-commercial-institutional steam generating units that burn coal, coal refuse, oil, wood, or mixtures of these and other fuels.	Duct burners have a maximum heat input capacity in excess of 100 MMBtu/hr. Auxiliary boiler will only combust natural gas.

Citation	Requirement	Inapplicability Statement
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Standards of Performance for New Stationary Sources Volatile Organic Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984 R18-2-901(17) and 40 CFR 60, Subpart Kb	Comply with standards for volatile organic storage vessels.	Project will not include volatile organic storage vessels with a capacity greater than or equal to 40 cubic meters.
Arizona Administrative Code, Title 18, Chapter 2, Article 9 New Source Performance Standards Stationary Gas Turbines R18-2-901(40) and 40 CFR 60, Subpart GG	Comply with standards for stationary gas turbines.	Does not apply to turbines regulated under 40 CFR 60, Subpart KKKK.
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, Subpart B, Requirements for Major Sources in Accordance with Clean Air Act Sections, Sections 112(g) and 112(j). R18-2-1101(B)(2) and 40 CFR 63, Subpart B	Case-by-case Maximum Achievable Control Technology must be determined and applied.	Project is not a major source of hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, Subpart Q, National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers R18-2-1101(B)(12) and 40 CFR 63, Subpart Q	Comply with the Maximum Achievable Control Technology standards for Industrial Process Cooling Towers.	Project is not a major source of hazardous air pollutants. Cooling towers are not a major source of hazardous air pollutants. Chromium-based water treatment chemicals will not be used in the cooling towers.
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines R18-2-1101(B)(83) and 40 CFR 63, Subpart YYYY	Comply with the Maximum Achievable Control Technology standards for stationary combustion turbines.	Project is not a major source of hazardous air pollutants.

Citation	Requirement	Inapplicability Statement
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines R18-2-1101(B)(84) and 40 CFR 63, Subpart ZZZZ	Comply with the Maximum Achievable Control Technology standards for stationary reciprocating internal combustion engines > 500 brake horsepower located at major hazardous air pollutant sources.	Project is not a major source of hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters R18-2-1101(B)(88) and 40 CFR 63, Subpart DDDDD	Comply with the Maximum Achievable Control Technology standards for Industrial, Commercial, and Institutional Boilers and Process Heaters.	Project is not a major source of hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 16 Pre-Trigger Monitoring, Recordkeeping and Reporting R18-2-1612 and 40 CFR 51.309	Comply with applicable monitoring, recordkeeping, and reporting requirements of the pre-trigger provisions of the SO_2 Milestones and Backstop Trading Program.	Project will not have actual emissions of sulfur dioxide of 100 tons or more per year.
Arizona Administrative Code, Title 18, Chapter 2, Article 17 Notice of Types and Amounts of HAPs R18-2-1704	Notify ADEQ, in a permit application, of the types and amounts of hazardous air pollutants emitted by the source.	Project will be neither a major source of state hazardous air pollutants nor a listed minor source of state hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 17 Modifications; Permits; Permit Revisions R18-2-1705	Obtain a permit or significant permit revision prior to constructing or modifying a source that is subject to Article 17.	Project will be neither a major source of state hazardous air pollutants nor a listed minor source of state hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 17 Case-by-case HAPRACT Determination R18-2-1706	Conduct a case-by-case HAPRACT determination.	Project will be neither a major source of state hazardous air pollutants nor a listed minor source of state hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 17 Case-by-case AZMACT Determination R18-2-1707	Conduct a case-by-case AZMACT determination.	Project will be neither a major source of state hazardous air pollutants nor a listed minor source of state hazardous air pollutants.
Arizona Administrative Code, Title 18, Chapter 2, Article 17 Risk Management Analyses R18-2-1708	Conduct a risk management analysis.	Project will be neither a major source of state hazardous air pollutants nor a listed minor source of state hazardous air pollutants.

Citation	Requirement	Inapplicability Statement
Federal New Source Performance Standards Standards of Performance for Stationary Gas Turbines 40 CFR 60, Subpart GG	Comply with standards for stationary combustion turbines.	Does not apply to stationary combustion turbines regulated under 40 CFR 60, Subpart KKKK.
Federal New Source Performance Standards Standards of Performance for Stationary Spark Ignition Internal Combustion Engines 40 CFR 60, Subpart JJJJ	Comply with standards for stationary spark ignition internal combustion engines.	Project does not include stationary spark ignition internal combustion engines.
Federal New Source Performance Standards Standards of Performance for Stationary Combustion Turbines 40 CFR 60, Subpart KKKK 60.4333(b)	Use one of the methods specified to determine oxides of nitrogen emissions from each turbine using a combined emission point.	Each turbine will have a separate emission point.
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources 40 CFR 63, Subpart JJJJJJ	Comply with the Maximum Achievable Control Technology standards for area source industrial, commercial, and institutional boilers.	40 CFR Part 63, Subpart JJJJJJ does not apply to gas-fired boilers (see 40 CFR 63.11195(e)).
Arizona Administrative Code, Title 18, Chapter 2, Article 11 Federal Hazardous Air Pollutants, National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units 40 CFR 63, Subpart UUUUU	Comply with the Maximum Achievable Control Technology standards for coal- and oil-fired electric utility steam generating units.	40 CFR Part 63, Subpart UUUUU does not apply to gas-fired equipment (see 40 CFR 63.9982(a)).
Federal NO_x budget trading program and CAIR NO_x and SO_2 Trading Programs (federal transport rule) 40 CFR Part 97	Comply with the transport rule requirements.	Arizona is not covered under the transport rule (see 40 CFR 52.34).

Notes:

CAIR = Clean Air Interstate Rule
CFR = Code of Federal Regulations
MMBtu/hr = Million British thermal units per hour
NO_x = Oxides of nitrogen
SO_2 = Sulfur dioxide

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258
Approval expires 11/30/2012

Acid Rain Permit Application

For more information, see instructions and 40 CFR 72.30 and 72.31.

This submission is: ☒ new ☐ revised for Acid Rain permit renewal

STEP 1

Identify the facility name, State, and plant (ORIS) code.

Bowie Power Station Facility (Source) Name	**Arizona** State	**555780** Plant Code

STEP 2

Enter the unit ID# for every affected unit at the affected source in column "a."

a	b
Unit ID#	Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1)
CTG1	**Yes**
GTG2	**Yes**

Permit Requirements

STEP 3

Read the standard requirements.

(1) The designated representative of each affected source and each affected unit at the source shall:

(i) Submit a complete Acid Rain permit application (including a compliance plan) under 40 CFR part 72 in accordance with the deadlines specified in 40 CFR 72.30; and

(ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain permit application and issue or deny an Acid Rain permit;

(2) The owners and operators of each affected source and each affected unit at the source shall:

(i) Operate the unit in compliance with a complete Acid Rain permit application or a superseding Acid Rain permit issued by the permitting authority; and

(ii) Have an Acid Rain Permit.

Monitoring Requirements

(1) The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75.

(2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the source or unit, as appropriate, with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.

(3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements

(1) The owners and operators of each source and each affected unit at the source shall:

(i) Hold allowances, as of the allowance transfer deadline, in the source's compliance account (after deductions under 40 CFR 73.34(c)), not less than the total annual emissions of sulfur dioxide for the previous calendar year from the affected units at the source; and

(ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.

(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.

(3) An affected unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:

(i) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or

(ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an affected unit under 40 CFR 72.6(a)(3).

Sulfur Dioxide Requirements, Cont'd.

STEP 3, Cont'd.

(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.
(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.
(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements

The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements

(1) The designated representative of an affected source that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
(2) The owners and operators of an affected source that has excess emissions in any calendar year shall:
(i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
(ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements

(1) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
(i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;

Recordkeeping and Reporting Requirements, Cont'd.

STEP 3, Cont'd.

(ii) All emissions monitoring information, in accordance with 40 CFR part 75, provided that to the extent that 40 CFR part 75 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,
(iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.

(2) The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.
(5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.
(6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit.
(7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities

No provision of the Acid Rain Program, an Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 shall be construed as:
(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating

Bowie Power Station
Facility (Source) Name (from STEP 1)

Effect on Other Authorities, Cont'd.

STEP 3, Cont'd.

to applicable National Ambient Air Quality Standards or State Implementation Plans;
(2) Limiting the number of allowances a source can hold; *provided,* that the number of allowances held by the source shall not affect the source's obligation to comply with any other provisions of the Act;
(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;
(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

Certification

STEP 4
Read the certification statement, sign, and date.

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name **Tom C. Wray**	
Signature Tom Wray	Date 10/27/10

From: David Kahrs
Sent: Friday, August 16, 2013 1:29 PM
To: 'aquitania.manny@epa.gov'; 'Rivera.Shirley@epa.gov'
Cc: 'Bixler.Wayne@azdeq.gov'; Mickey Siegel
Subject: Bowie Power Station section 7 consultation

Manny (and Shirley),

I understand Shirley Rivera is out of the office for a few weeks. I'm a biologist with EPG, EPA's designated non-federal representative under 50 CFR 402.08. I prepared the original Biological Assessment that was submitted in 2011, and was asked to prepare an update to support the upcoming permit renewal application. Attached is a table with all ESA-listed, proposed, and candidate species from Cochise and Graham counties, with notes on any that have had some sort of regulatory change since 2011. None of those species are present in the Project area, so the original determination of "may affect, not likely to adversely affect" remains the same for the Lesser Long-nosed Bat and a determination of "no effect" for all other species.

I've included some preliminary text, but EPA will need to develop it into a letter to USFWS requesting concurrence. For your reference, I've also attached the original letter from EPA dated August 2011. Please let me know if you have any questions or would like more information. Thank you,

David Kahrs

David Kahrs | Wildlife Biologist | 602 956 4370
epg | 4141 N. 32nd Street Ste. 102, Phoenix, AZ 85018| dkahrs@epgaz.com | epgaz.com

The EPA provided USFWS with a Biological Assessment (BA) for the Proposed Bowie Power Station on August 26, 2011, prepared by Environmental Planning Group, LLC (EPG), as EPS's designated non-Federal representative under 50 CFR 402.08. The BA included a determination that the Project "may affect, but is not likely to adversely affect", the Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*). The Project was determined to have "no effect" on any other species listed under the Endangered Species Act (ESA). The USFWS provided concurrence with that determination on September 06, 2011.

…update with description of permit renewal…

EPG reviewed current county lists and other information on species listed under the ESA in Cochise and Graham counties, Arizona. Changes in the listing status, critical habitat designations, and any new information on the distribution of ESA-listed, proposed, or candidate species since 2011 are noted in Table 1. Although several listed species in Cochise and Graham counties have changed in ESA status, none of these species may occur in the Project area. Thus, the Project "may affect, but is not likely to adversely affect" the Lesser Long-nosed Bat and would have "no effect" on any other species listed under the ESA.

…request concurrence…

Table 1. Endangered Species Act: Endangered, Threatened, Candidate, and Proposed Species in Cochise and Graham Counties, Arizona.

Endangered Species Act Status Abbreviations
C=Candidate; E=Endangered; NEP=Non-essential Experimental Population; T=Threatened; P=Proposed; DPS=Distinct Population Segment

Common Name *Latin Name*	**Status**	**Critical Habitat**	**Status changes since 2010**	**Determination**
Mammals				
Lesser Long-nosed Bat *Leptonycteris curasoae yerbabuenae*	E	None.	None.	May affect, not likely to adversely affect
Mount Graham Red Squirrel *Tamiasciurus hudsonicus grahamensis*	E	Designated, outside project area.	None.	No effect
Mexican Gray Wolf *Canis lupus baileyi*	E (NEP)	None.	Revisions to the management policies for the Mexican Gray Wolf NEP were proposed in 2013. No suitable habitat is present in the Project area; thus, no effects are anticipated from any policy changes.	No effect
Jaguar *Panthera onca*	E	Proposed, outside project area.	Critical habitat proposed. The Peloncillo Unit is approximately 56 miles from Project area, and the Whetstone Unit is approximately 60 miles from Project area.	No effect
Ocelot *Leopardus* (*Felis*) *pardalis*	E	None.	None.	No effect
Birds				
Brown Pelican *Pelecanus occidentalis*	E Delisted	NA	None.	No effect
Bald Eagle *Haliaeetus leucocephalus*	T Delisted	NA	The Sonoran DPS was delisted in 2011.	No effect
Northern Aplomado Falcon *Falco femoralis septentrionalis*	E (NEP)	None.	None.	No effect
Yellow-billed Cuckoo (Western DPS) *Coccyzus americanus*	C	NA	None. A proposed listing rule is understood to be pending, although no suitable habitat is present in the Project area.	NA
Mexican Spotted Owl *Strix occidentalis lucida*	T	Designated, outside project area.	None.	No effect
Southwestern Willow Flycatcher *Empidonax traillii extimus*	E	Designated, outside project area.	The boundaries of designated critical habitat were modified in 2013, outside the Project area.	No effect

Table 1. Endangered Species Act: Endangered, Threatened, Candidate, and Proposed Species in Cochise and Graham Counties, Arizona.

Endangered Species Act Status Abbreviations
C=Candidate; E=Endangered; NEP=Non-essential Experimental Population; T=Threatened; P=Proposed; DPS=Distinct Population Segment

Common Name ***Latin Name***	**Status**	**Critical Habitat**	**Status changes since 2010**	**Determination**
Sprague's Pipit *Anthus spragueii*	C	NA	None.	NA
Reptiles				
Sonoran Desert Tortoise *Gopherus morafkai*	C	NA	The Sonoran Desert Tortoise was recognized as a separate species from the Mojave Desert Tortoise, and is a Candidate for ESA listing. The species is not present in the Project area.	NA
Northern Mexican Gartersnake *Thamnophis eques megalops*	P	Proposed, outside project area.	The Northern Mexican Gartersnake was proposed for listing as Threatened with critical habitat outside the Project area.	No effect.
Narrow-headed Gartersnake *Thamnophis rufipunctatus*	P	Proposed, outside project area.	The Narrow-headed Gartersnake was proposed for listing as Threatened with critical habitat outside the Project area.	No effect.
New Mexico Ridgenose Rattlesnake *Crotalus willardi obscurus*	T	Designated, outside project area.	None.	No effect.
Amphibians				
Sonora Tiger Salamander *Ambystoma tigrinum stebbinsi*	E	None.	None.	No effect.
Arizona Treefrog (Huachuca – Canelo Hill DPS) *Hyla wrightorum*	C	NA	None.	NA
Chiricahua Leopard Frog *Lithobates* (*Rana*) *chiricahuensis*	T	Designated, outside project area.	Critical habitat was designated for the Chiricahua Leopard Frog outside the Project area.	No effect.
Fish				
Apache Trout *Oncorhynchus apache*	T	None.	None.	No effect.
Gila Trout *Oncorhynchus gilae*	T	None.	None.	No effect.
Gila Chub *Gila intermedia*	E	Designated, outside project area.	None.	No effect.

Table 1. Endangered Species Act: Endangered, Threatened, Candidate, and Proposed Species in Cochise and Graham Counties, Arizona.

Endangered Species Act Status Abbreviations
C=Candidate; E=Endangered; NEP=Non-essential Experimental Population; T=Threatened; P=Proposed; DPS=Distinct Population Segment

Common Name ***Latin Name***	**Status**	**Critical Habitat**	**Status changes since 2010**	**Determination**
Headwater Chub *Gila nigra*	C	None.	None.	NA
Yaqui Chub *Gila purpurea*	E	Designated, outside project area.	None.	No effect.
Roundtail Chub (Lower Colorado River DPS) *Gila robusta*	C	NA	None.	NA
Spikedace *Meda fulgida*	T	Designated, outside project area.	The boundaries of designated critical habitat were modified in 2012, outside the Project area.	No effect.
Beautiful Shiner *Cyprinella formosa*	T	Designated, outside project area.	None.	No effect.
Loach Minnow *Tiaroga cobitis*	T	Designated, outside project area.	The boundaries of designated critical habitat were modified in 2012, outside the Project area.	No effect.
Razorback Sucker *Xyrauchen texanus*	E	Designated, outside project area.	None.	No effect.
Yaqui Catfish *Ictalurus pricei*	T	Designated, outside project area.	None.	No effect.
Desert Pupfish *Cyprinodon macularius*	E NEP	Designated, outside project area.	None.	No effect.
Gila Topminnow *Poeciliopsis occidentalis*	E NEP	Designated, outside project area.	None.	No effect.
Invertebrates				
San Bernardino Springsnail *Pyrgulopsis bernardina*	E	Designated, outside project area.	The San Bernardino Springsnail was listed as threatened with critical habitat outside the Project area in 2012.	No effect.
Huachuca Springsnail *Pyrgulopsis thompsoni*	C	NA		NA
Plants				
Cochise pincushion cactus *Coryphantha robbinsorum*	T	None.	None.	No effect.

Table 1. Endangered Species Act: Endangered, Threatened, Candidate, and Proposed Species in Cochise and Graham Counties, Arizona.

Endangered Species Act Status Abbreviations
C=Candidate; E=Endangered; NEP=Non-essential Experimental Population; T=Threatened; P=Proposed; DPS=Distinct Population Segment

Common Name ***Latin Name***	**Status**	**Critical Habitat**	**Status changes since 2010**	**Determination**
Pima pineapple cactus *Coryphantha scheeri* var. *robustispina*	E	None.	None.	No effect.
Lemmon fleabane *Erigeron lemmonii*	Not Listed	NA	The Lemmon Fleabane was previously a candidate for ESA listing. Listing was found to be not warranted in 2012.	NA
Huachuca water umbel *Lilaeopsis schaffneriana* var. *recurva*	E	Designated, outside project area.	None.	No effect.
Arizona cliffrose *Purshia* (*Cowania*) *subintegra*	E	None.	None.	No effect.
Canelo Hills ladies' tresses *Spiranthes delitescens*	E	None.	None.	No effect.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

August 26, 2011

Mr. Steve Spangle
Field Supervisor
U.S. Fish and Wildlife Service
Arizona Ecological Services
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 93003

Re: Request for Informal Consultation and Concurrence with EPA's Determination under Section 7 of Federal Endangered Species Act for Proposed Bowie Power Station

Dear Mr. Spangle:

By this letter, the United States Environmental Protection Agency, Region 9 ("Region 9") requests your written concurrence with EPA's determination that the issuance of a federal Prevention of Significant Deterioration ("PSD") permit pursuant to Part C of the Clean Air Act and regulations at 40 C.F.R. § 52.21 through delegated authority to the Arizona Department of Environmental Quality ("ADEQ") for the Bowie Power Station ("BPS") may affect, but is not likely to adversely affect, the federally endangered Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), and will have no effect on the ocelot (*Leopardus pardalis*). Our request is made pursuant to Section 7 of the federal Endangered Species Act ("ESA").

BPS is a proposed 525-megawatt combined-cycle power plant that will consist of two natural gas-fired combustion turbines, to be located about two miles north of the unincorporated community of Bowie in the southern Arizona area of Cochise County. Bowie Power Station, LLC ("Applicant") has applied to ADEQ for a PSD permit for BPS. Region 9 is responsible for complying with ESA Section 7 requirements with respect to federal PSD permitting, and must ensure that issuance of the PSD permit to the Applicant is not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of critical habitat of such species.

The Applicant, including EPG, Inc., acting under its designated non-federal representative status as prescribed under 50 C.F.R. § 402.08, compiled and submitted a Biological Assessment to Region 9. Attached is the final Biological Assessment that incorporates revisions in response to comments from Mark Crites of your staff. We have reached our conclusions based upon our review of this final Biological Assessment and discussions with Mark Crites.

In summary, pursuant to Section 7 of the ESA, we request FWS's written concurrence that the proposed project may affect, but is not likely to adversely affect, the Lesser long-nosed bat, and will have no effect on the ocelot. We look forward to working with you on this matter. If you have any questions, please contact Andrew Chew of my staff at (415) 947-4197 or chew.andrew@epa.gov, or Shirley Rivera at (415) 972-3966 or rivera.shirley@epa.gov.

Sincerely,

Gerardo C. Rios
Chief, Permits Office
Air Division

Encl.

cc: Gary K. Crane, Ph.D., Southwestern Power Group
E. Linwood (Lin) Smith, Ph.D., EPG (via email)
Mark Crites, USFWS (via email)
Balaji Vaidyanathan, ADEQ (via email)

BIOLOGICAL ASSESSMENT

FOR THE BOWIE POWER STATION, WILLOW SWITCHYARD, AND ASSOCIATED LINEAR FACILITIES (TRANSMISSION AND NATURAL GAS LINE)

LOCATED IN
COCHISE AND GRAHAM COUNTIES, ARIZONA

Prepared for:

BOWIE POWER STATION, LLC

Prepared by:

EPG
330 East 13th Street
Tucson, Arizona 85701

March 2010

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BIOLOGICAL ASSESSMENT FOR THE BOWIE POWER STATION, WILLOW SWITCHYARD AND ASSOCIATED LINEAR FACILITIES (TRANSMISSION AND NATURAL GAS LINE)

INTRODUCTION

The following Biological Assessment (BA) was prepared for the proposed Bowie Power Station, Willow Switchyard and its associated linear facilities. This includes a 345kV-transmission line and 20-inch natural gas pipeline. The purpose of this Biological Assessment is to determine if the development and/or operation of the above project would have any effects on species that are designated by the United States Fish and Wildlife Service (USFWS) as threatened or endangered under the Endangered Species Act (ESA) of 1973, as amended, or are proposed or candidate species for such designation.

Three species undergoing status review prior to any listing determinations are also discussed in an advisory context, as their listing status may change over the timeline of project development. No actions pertaining to Section 7 of the ESA are required for those species while under review, although they may have special status with other agencies. Publishing of any proposed or final listing rules for those species would require reinitiating Section 7 consultation or conference. Early identification of possible effects may allow planning to minimize impacts on these species and aid in any future consultation with the USFWS.

PROJECT LOCATION

The proposed project comprises four major elements, all of which are considered in this BA (Figure 1). The Bowie Power Station site is located approximately 2 miles north of the unincorporated town of Bowie in Cochise County, Arizona. A 345 kilovolt (kV) transmission line from the power plant will travel north-northeast for approximately 5 miles before turning west in Graham County for approximately 7 miles, and then trend northwest approximately 3 miles to the Willow Switchyard, located on State Route 191. Natural gas will be supplied through a proposed 20-inch pipeline travelling from an El Paso Natural Gas Company line 2 miles south of the town of Bowie under Interstate 10 to the power plant site. Elevation within the project site ranges from approximately 1,120 meters above mean sea level (amsl) within the power station site to 1,340 meters amsl at the Willow Switchyard.

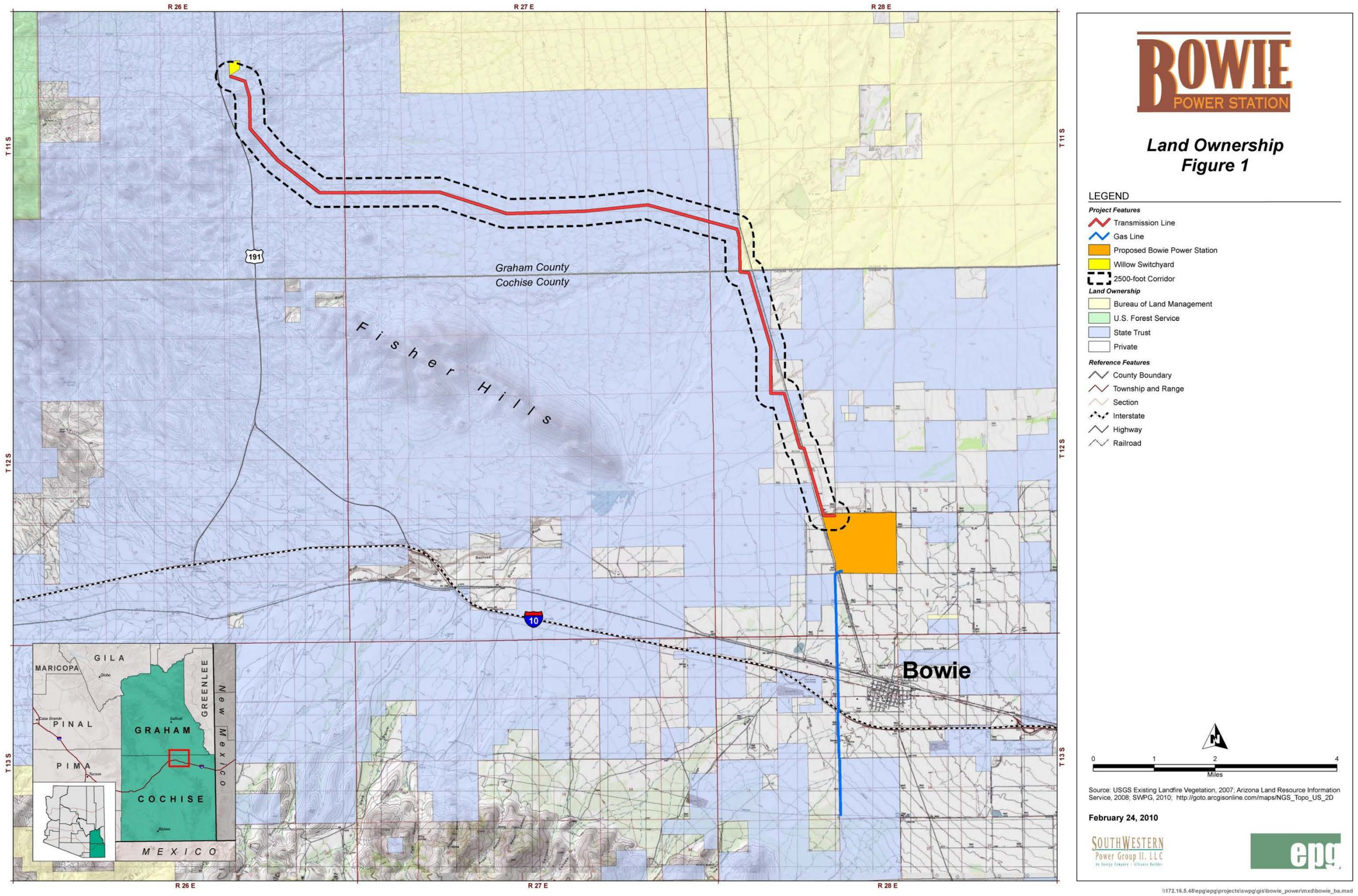

Figure 1. Land Ownership

PROJECT DESCRIPTION

Bowie Power Station

The proposed Bowie Power Station will be a natural gas-fired, combined-cycle electric generating plant located in an area of approximately 700 acres. The plant will use current state-of-the-art, "F" combustion turbine technology in a highly efficient combined cycle mode. The plant will be designed to operate continuously in a base-loaded mode but is equipped with power augmentation and duct burning capability to meet peak load conditions when the demand for power is needed. The power plant is designed as a 525-megawatt (MW) power block with power augmentation and supplemental firing. The power block consists of the following basic components:

- Two combustion turbine generators (CTG)
- Two heat recovery steam generators (HRSG)
- One steam turbine electric generator

The circulating water will be cooled by a multi-cell (i.e., nine cells), wet mechanical draft cooling tower. Groundwater wells will supply the make-up water. The plant will incorporate a zero discharge wastewater system. An evaporative cooling system or inlet fogging system will be used to reduce the combustion turbine air inlet temperature and increase the plant output and efficiency during warm weather.

The plant will be fueled by natural gas. Emissions control technology will be used to ensure compliance with air quality regulations. Nitrogen oxide emissions will be reduced via *in situ* combustion controls and a post-combustion pollution control system. Carbon monoxide and volatile organic emissions will be controlled using a post-combustion pollution control system. The supporting infrastructure includes vehicular access, water supply system, natural gas supply lines, transmission interconnection, and a switchyard.

In a CTG, air is compressed, heated through the direct combustion of fuel, and then expanded through a turbine to drive the compressor and an electric generator. After fuel combustion in the CTG, the HRSG produces steam using the hot exhaust gases. The steam from the HRSG is expanded in a steam turbine, which drives an electrical generator to produce power. Each CTG will be configured such that steam can be injected between the combustor and the first stage turbine to increase mass flow. The increased mass flow results in increased power production and is referred to as power augmentation. The HRSG will be equipped with supplemental firing that will be used to increase the output of the power station for peak output and increase the overall cycle efficiency. The two HRSG stacks will be 180 feet high. The auxiliary equipment includes a natural gas-fired boiler and a diesel-fired emergency fire pump.

Groundwater pumped from wells on the Bowie property will supply process water. The estimate of annual average water use is 5,500 acre feet per year. A zero-discharge wastewater system will dispose of wastewater from the cooling tower blow-down, HRSG blow-down, and make-up water treatment system effluent. A multi-cell, wet, mechanical draft cooling tower will be used to reduce the temperature of the circulating water. The circulating water system will operate with

a minimum of 15 cycles of concentration to decrease the make-up water use and the amount of blow-down to be discharged, using side-stream softening to increase the circulating water system cycles of concentration, thereby reducing the amount of blow-down, groundwater usage, and wastewater.

The wastewater will be directed to lined evaporation ponds approximately 4 feet deep with a total area of approximately 60 acres. Site storm water drainage will be conveyed to an unlined 5-acre retention impoundment with a depth of 3 to 4 feet. The average annual flowrate of wastewater into the evaporating impoundment is estimated to be 188 gallons per minute (gpm). Discharge of wastewater into the impoundment structures will be on a continuous basis.

Bowie Transmission Line

The proposed 345kV transmission lines will be designed for a double circuit, with three-phase circuits (three bundles of two conductors per phase) and static wires on single pole structures. The 345kV transmission structures are typically 160 feet (maximum of 175 feet) in height with span lengths of between 800 feet and 1,100 feet. The heights of structures, span length, or other characteristics could vary based on the final design or in order to accommodate site-specific conditions and mitigation measures. The length of the proposed route is approximately 15 miles. A total right-of-way width of 250 feet is anticipated for the 345kV transmission line. Access for transmission line construction and maintenance will follow an existing unimproved road roughly paralleling the proposed route.

Willow Switchyard

The new Willow Switchyard (substation) will be constructed at a site located approximately 3 miles north of the Cochise/Graham County Line on State Trust Land in Graham County, approximately 0.25 mile east of State Route 191. The switchyard site will require approximately 23 acres. The purpose of the switchyard is to:

- Tie the two 345kV transmission lines from the Bowie Power Station into the existing TEP Greenlee-Vail and Springerville-Vail 345kV transmission lines
- Provide an interconnection with the AEPCO Red Tail-Dos Candados 230kV transmission line located adjacent to the switchyard site

Bowie 20-inch Gas Lateral

The natural gas supply to power the plant would be provided by a newly constructed 20-inch line travelling south, 4 miles from the power plant, under Interstate 10, and intersecting with El Paso Natural Gas Line 1600.

Project Construction

The actual construction in the field for the total 525-MW facility should be completed in approximately 36 months. During this period, the construction work force is expected to average approximately 250 people on site, peaking at 500. An area adjacent to the plant will be used temporarily for construction parking, work trailers, storage, and lay-down areas.

EXISTING ENVIRONMENT

Geology

The project area is located within the Basin and Range Physiographic Province, a region covering much of the arid Southwest between the Sierra Nevada Range and Rocky Mountains. Numerous mountain ranges trending north to south are separated by valleys filled with erosional sediment. The project area is located between the largely granitic Pinaleño Mountains to the west and the largely basaltic Peloncillo Mountains to the east. The low, volcanic Fisher Hills lie directly south of the transmission line, and the Dos Cabezas Mountains lie approximately 5 miles south of the town of Bowie. The majority of the project area is located on alluvial fill soils, although the Willow Switchyard site and nearby portions of the transmission line approach outlying foothills of the Pinaleño Mountains, an area of shallow substrate and occasional exposed granitic outcrops (Towne 2004; Richard et al. 2000).

Climate

The arid Chihuahuan Desert receives a bimodal rainfall pattern. Widespread, gentle winter rainfall originates from Pacific storms moving inland. Winter rainfall contributes significantly to groundwater as peak flows are lower, allowing increased infiltration, and evaporative loss is very low during the cooler weather. A monsoon weather pattern in midsummer draws subtropical moisture into the region, driving abundant but scattered, heavy thunderstorms. The project area receives approximately 60 percent of its rainfall during summer, but much rainfall in summer is lost to runoff or evaporation. Average annual rainfall for Bowie, Arizona was 10.70 inches from 1899 to 2008, and the mean annual temperature was 64 degrees Fahrenheit (Western Regional Climate Center 2010).

Hydrology

The project area is located within the San Simon Valley, the watershed of the ephemeral San Simon River. Total area of the watershed is approximately 2,250 square miles (Natural Resources Conservation Service [NRCS] and Water Resources Research Center [WRRC] 2007). Approximately 25 miles north of the project area, the San Simon River joins the Gila River, a major tributary of the Colorado River. The Gila River watershed is approximately 57,900 square miles, draining nearly all of central and southern Arizona and a portion of central New Mexico.

Montane springs exist in the San Simon watershed, and the largest wetland was the San Simon Cienega (valley wetland) against the foothills of the Peloncillo Mountains, near where the river

crosses into New Mexico. Heavy grazing and other natural or man-made factors triggered massive erosion in the San Simon River and smaller side drainages, leading to channelization of most of the river and many smaller washes (Hastings 1959). The effects of channelization and groundwater pumping lowered the water table to a point where above-ground water at the San Simon Cienega was no longer supported. At present, artificial ponds supported by pumping provide permanent water at the cienega's location. No other natural permanent water exists on the valley floor.

No permanent water exists within the project area, although the numerous small washes flow temporarily following heavy precipitation. Two dams for flood and erosion control were placed on Gold Wash, the largest drainage crossing the transmission line, and may hold water for some time after rainfall. The dams are located approximately 4.25 miles upstream and 1.25 miles downstream from the transmission line route as it crosses the drainage. Two earthen stock tanks are located adjacent to the transmission line route north of the Fisher Hills, and are also semi-permanent. Erosion still contributes suspended sediment to surface flow in the valley (NRCS and WRRC 2007), and can contribute to sediment loads in the Gila River.

Land Status

The Willow Switchyard and the majority of the transmission line are located on Arizona State Trust Land (see Figure 1). Portions of the transmission line right-of-way border private land used for agriculture or ranching, as well as a portion of Bureau of Land Management land under grazing lease. The transmission line also parallels the in-use Arizona Eastern Railroad for approximately 5 miles. The power station is located entirely on privately owned agricultural fields. The gas line is located on private and state land, and also passes under Interstate 10.

Land Use

The town of Bowie is a medium-density residential area with a population of 706 (estimated in the 2000 census). The power plant site is located within fallow and in-use agricultural fields, and is bordered by cultivated areas and pecan orchards. Low-density residential housing is present between the plant site and the town of Bowie, and along the gas line route. The transmission line route passes out of agricultural areas into undeveloped open range with active cattle grazing and access for hunters and off-road vehicle traffic. The Willow Switchyard site is also undeveloped, although located adjacent to existing 345kV and 230kV transmission lines.

BIOMES

The project area is dominated by two biomes, semidesert grassland and Chihuahuan desertscrub as described by Brown (1982). Semidesert grassland is often formed where the Sonoran and Chihuahuan deserts meet at their upper elevation limits (Lowe 1955). Additionally, ephemeral washes in the project area have a plant assemblage derived from upland communities, although different in relative species abundance and productivity. Within each biome, changes in soil or water availability generally lead to specific vegetation series, and predictable associations of

dominant plants. This section contains brief descriptions of each plant community occurring in the project area (Figure 2).

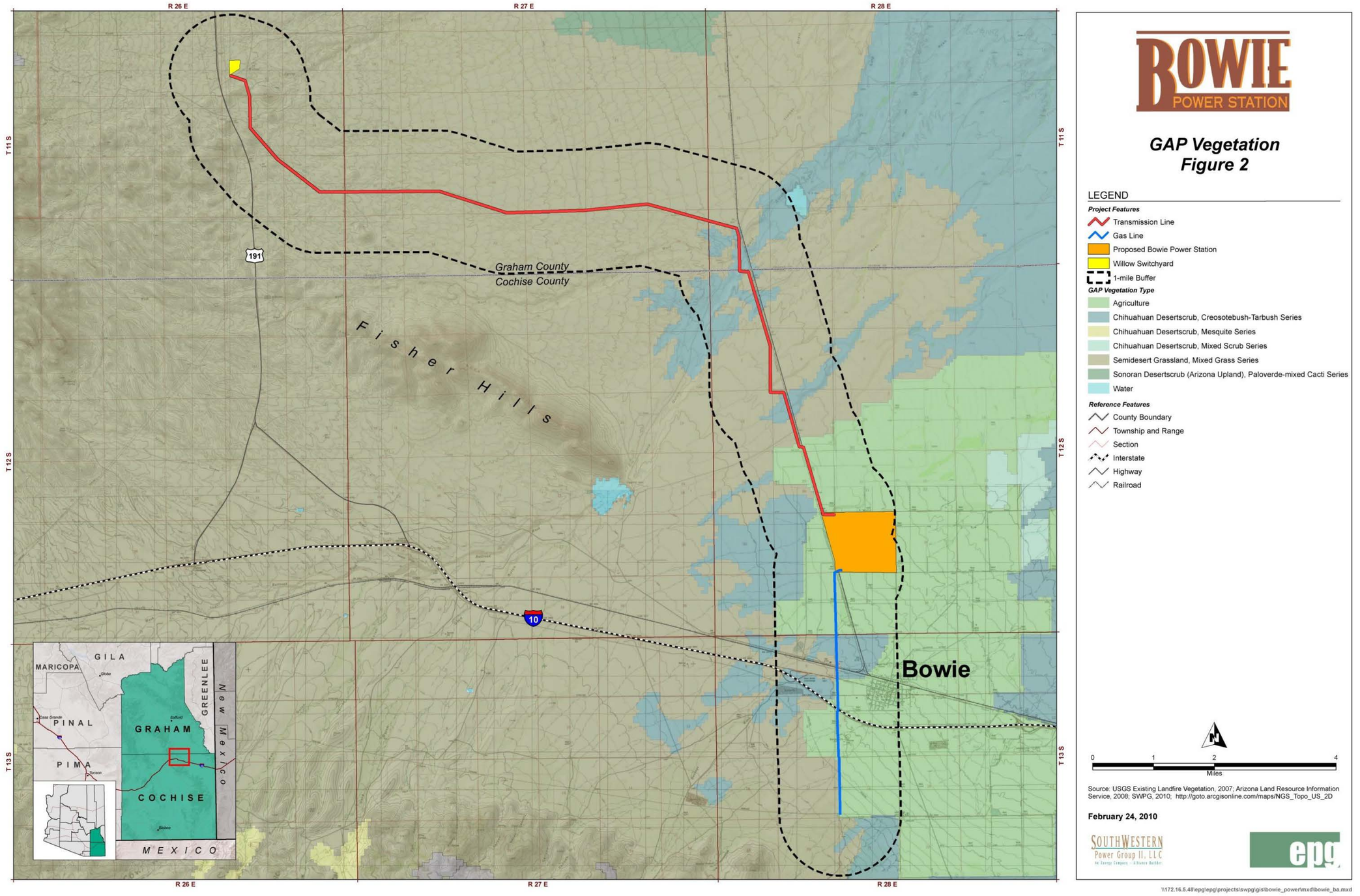

Figure 2. GAP Vegetation Map

Chihuahuan Desertscrub

Chihuahuan desertscrub is an arid, shrub-dominated biome extending from southeastern Arizona to western Texas and into north-central Mexico. Although the Chihuahuan Desert has a bimodal rainfall pattern, a greater amount of rain generally falls in summer than winter. Summer storms are typically localized thunderstorms, and much of the rainfall is lost as runoff or to evaporation in the high seasonal temperatures. Winter storms that do reach the Chihuahuan Desert are generally more widespread and make a significant contribution to soil moisture.

Within the project area, the most widespread Chihuahuan desertscrub plant series is the creosotebush-tarbush series, dominant across alluvial soils in valley bottoms throughout the Chihuahuan Desert. Creosote bush (*Larrea tridentata*) and tarbush (*Flourensia cernua*) are co-dominant in some locations, but Chihuahuan desertscrub within the project area is uniformly dominated by creosote bush. The walkingstick cactus (*Cylindropuntia spinosior*), tulip prickly-pear (*Opuntia phaeacantha*), Engelmann's prickly-pear (*Opuntia engelmannii*), longleaf jointfir (*Ephedra trifurca*), catclaw mimosa (*Mimosa aculeaticarpa*), and others are common overstory plants.

Semidesert Grassland

Semidesert grassland may sometimes be regarded as transitional between Sonoran or Chihuahuan desertscrub and adjacent biomes at higher elevations, or may be regarded as a distinct biome. This biome has undergone a massive transition since the 1880s, with land use practices and climatological factors contributing to a large-scale shift from a grass-dominated system to shrub invasion from adjacent desertscrub regionally and in the project area (Roundy and Jordan 1988). Reduction in fire frequency and grazing effects are apparently the primary causes, although drought or shifts in precipitation patterns may have also favored shrub invasion over grasses (Brown et al. 1997).

Climax semidesert grassland in the project area is uncommon, but patches remain that are dominated by native grama grasses (*Bouteloa* spp.), cane bluestem (*Bothriochloa barbinodis*), and introduced Lehmann lovegrass (*Eragrostis lehmanniana*), with interspersed soaptree yuccas (*Yucca elata*), honey mesquites (*Prosopis velutina*), creosotebush, and subshrubs such as burroweed (*Isocoma tenuisecta*) and broom snakeweed (*Gutierrezia sarothrae*). Subshrubs have replaced grasses in much of the former grasslands in the project area.

Xeroriparian Scrub

Washes in the Southwest are subject to irregular but often very strong scouring flood events. Generally the floor of such washes is sandy or gravelly depositional sediment that may support fast-growing, disturbance-tolerant plant species. However, the increased available moisture in drainages supports greater productivity of shrubs from surrounding upland habitats, such as velvet mesquite, catclaw acacia (*Acacia greggii*), and fourwing saltbush (*Atriplex canescens*). A small number of species are only found within Xeroriparian Scrub in or near the project area,

including desert willow (*Chilopsis linearis*), Arizona walnut (*Juglans major*), and Fremont cottonwood (*Populus fremontii*).

Agricultural and Introduced Vegetation

Much of the San Simon Valley near the town of Bowie supports or has supported irrigated and cultivated agriculture. The power plant site is located within agricultural fields, as are nearby portions of the transmission line and gas line. Unmanaged areas near Bowie, bordering agricultural fields and along the Arizona Eastern Railway are generally dominated by introduced plants, particularly Russian thistle (*Salsola kali*) and Bermuda grass (*Cynodon dactylon*), and disturbance-tolerant native plants.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

Methods

For this project, a review was conducted of wildlife and plant species that are federally listed and receive protection under the ESA, and those that are candidate or proposed species for listing under the ESA. The review used county lists of federal species obtained from the Southwest Region Ecological Services office of the USFWS, and included areas of designated critical habitat when applicable.

Table 1 lists the federal species reviewed, their current status, and whether critical habitat has been designated for the species. Table 1 also includes a brief habitat and location description for each species, and a determination of the potential for the species occurring within the project action area. The last column lists justification for exclusion of species included in the table from further discussion of project effects, as supported by review of federal or state agency documents and peer-reviewed literature. Exclusion typically reflects lack of suitable habitat within the area of influence and/or the area being significantly outside of the currently understood or reasonably expected geographic or elevational range of the species. Species with some potential for presence near the project area of influence are discussed in detail following Table 1. No species with designated critical habitat occurs in the project vicinity.

Table 1. Endangered, Threatened, Candidate, and Proposed Species Listed under the Endangered Species Act				
Endangered Species Act Status Abbreviations C=Candidate; E=Endangered; NEP=Non-essential Experimental Population; T=Threatened; 12MR=Undergoing 12-month status review; DPS=Distinct Population Segment				
Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat**	**Discussed in Text or Reason for Exclusion**
MAMMALS				
Lesser Long-nosed Bat *Leptonycteris curasoae yerbabuenae*	E	No	Desertscrub or grassland habitat to lower oak elevations where agaves or saguaros are present as food sources. Roosts in large colonies in caves and mines.	Yes
Mexican Long-nosed Bat *Leptonycteris nivalis*	E	No	Caves and mines in the high pine-oak belt, occasionally down to desertscrub elevations. One record from the Peloncillo Mountains on the border of Arizona and New Mexico.	No suitable habitat; outside of known range.
Mount Graham Red Squirrel *Tamiasciurus hudsonicus grahamensis*	E	Yes	Spruce or spruce/Douglas fir forest; found only above 7,800 feet on Mount Graham in the Pinaleño Mountains of Arizona.	No suitable habitat; outside of known range.
Mexican Gray Wolf *Canis lupus baileyi*	E (NEP)	No	Chaparral, woodland, and forested areas.	No suitable habitat; outside of NEP range.
Jaguar *Panthera onca*	E	No	Occurs through a wide range of habitats up to subalpine conifer forest.	Yes
Ocelot *Leopardus* (*Felis*) *pardalis*	E	No	Humid tropical and sub-tropical forests, savannahs, and semi-arid thornscrub habitats, desertscrub and along riparian corridors in the southwestern United States.	No suitable habitat; outside of known range.
BIRDS				
Brown Pelican *Pelecanus occidentalis*	E Delisted	NA	A coastal species occasionally moved inland with large storms. Scattered records occur for large Southwestern lakes and wetlands.	Occurrence would be accidental. Delisted November 2009.
Bald Eagle (Sonoran Desert DPS) *Haliaeetus leucocephalus*	T	No	Large trees and cliffs near water with abundant prey along rivers and reservoirs between 460 and 7,930 feet elevation. Includes Graham County.	Yes
Bald Eagle (all others) *Haliaeetus leucocephalus*	T Delisted	NA	Large trees and cliffs near water with abundant prey along rivers and reservoirs between 460 and 7,930 feet elevation. Includes Cochise County.	Delisted July 2007.
Northern Aplomado Falcon *Falco femoralis septentrionalis*	E (NEP)	No	Grassland and savannah habitats.	Yes

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat**	**Discussed in Text or Reason for Exclusion**
Yellow-billed Cuckoo (Western DPS) *Coccyzus americanus*	C	N/A	Below 6,500 feet elevation in large blocks of gallery riparian woodlands with cottonwood, willow, or salt cedar along streams and rivers.	No suitable habitat.
Mexican Spotted Owl *Strix occidentalis lucida*	T	Yes	Dense forest, coniferous and hardwood, steep-walled canyons.	No suitable habitat.
Southwestern Willow Flycatcher *Empidonax traillii extimus*	E	Yes	Below 8,500 feet elevation in cottonwood/willow and salt cedar communities along rivers and streams.	No suitable habitat.
Sprague's Pipit *Anthus spragueii*	12MR	N/A	Nests in northern Great Plains in tall grasses, and winters in the southern Great Plains, Southwestern deserts, and semidesert grasslands into central Mexico.	Yes
AMPHIBIANS				
Sonora Tiger Salamander *Ambystoma tigrinum stebbinsi*	E	No	Semidesert grasslands and foothills in the San Rafael Valley. Larvae are aquatic in still water, and adults shelter in burrows or under objects near water. Barred Tiger Salamander (*A. t. mavortium*) introduced widely in region.	Outside of the known range of the species.
Arizona Treefrog (Huachuca – Canelo Hill DPS) *Hyla wrightorum*	C	N/A	Above 5,000 feet in oak and pine woodlands. Breeding habitat is restricted to temporary, predator-free pools formed during summer rains.	Outside of the known range of the species.
Chiricahua Leopard Frog *Lithobates* (*Rana*) *chiricahuensis*	T	No	Rocky streams with deep pools in oak and pine-oak woodlands and pine forests. Mountainous areas of southeast Arizona, southwest New Mexico, and Mexico.	Yes
REPTILES				
Sonoran Desert Tortoise *Gopherus agassizii*	12MR	N/A	Rocky slopes, incised washes in upper bajadas, and low foothills of desert mountains from California east to the San Pedro River valley.	Outside of the known range of the species.
Arizona Striped Whiptail *Aspidoscelis arizonae*	12MR	N/A	Open semidesert grasslands in the Sulphur Springs Valley, Arizona.	Yes
Northern Mexican Garter Snake *Thamnophis eques megalops*	C	N/A	Inhabits streams, rivers, cienegas, and ponds with dense shoreline vegetation from Sonoran desertscrub up into Petran montane conifer forest.	Yes

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat**	**Discussed in Text or Reason for Exclusion**
New Mexico Ridgenose Rattlesnake *Crotalus willardi obscurus*	T	Yes	Occurs in rugged montane habitats in Madrean evergreen woodland and Petran montane forests of the Animas and Peloncillo mountains in the United States.	Outside of the known range of the species.
FISH				
Apache Trout *Oncorhynchus apache*	T	No	High elevation, cold and clear streams.	No suitable habitat; outside of known range.
Gila Trout *Oncorhynchus gilae*	T	No	Endemic to the Verde River drainage of Arizona and the upper Gila basin of New Mexico. Restricted to small streams at high elevations. Historically in Graham County, now extirpated.	No suitable habitat; outside of known range.
Gila Chub *Gila intermedia*	E	Yes	Utilizes a variety of habitat types in smaller streams, springs, and marshes. Adults prefer heavily vegetated deeper pools, while juveniles occur in riffles, pools, and along undercut banks.	No suitable habitat; outside of known range.
Headwater Chub *Gila nigra*	C	N/A	Mid- to head-water reaches of mid-sized streams where they are associated with deep, near shore pools adjacent to stream riffles.	No suitable habitat; outside of known range.
Yaqui Chub *Gila purpurea*	E	Yes	Occurs in deep pools of small streams with dense aquatic vegetation. Populations of the species in the United States are limited primarily to the San Bernardino and Leslie Canyon National Wildlife Refuges in Cochise County, Arizona.	No suitable habitat; outside of known range.
Roundtail Chub (Lower Colorado River DPS) *Gila robusta*	C	N/A	Deep pools and main channels of medium to large streams and rivers.	No suitable habitat; outside of known range.
Spikedace *Meda fulgida*	T	Yes	Non-turbulent waters of moderate to shallow depth over substrates of finer sediments.	No suitable habitat; outside of known range.
Beautiful Shiner *Cyprinella formosa*	T	Yes	Small to medium sized streams and ponds with sand, gravel, and rock bottoms.	No suitable habitat; outside of known range.
Loach Minnow *Tiaroga cobitis*	T	Yes	Bottom-feeding species that occurs in gravelly riffles in small- to medium-sized streams and rivers.	No suitable habitat; outside of known range.

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat**	**Discussed in Text or Reason for Exclusion**
Razorback Sucker *Xyrauchen texanus*	E	Yes	Below 6,000 feet elevation in backwaters and impoundments near strong currents or deep pools, where water is not fast moving in Colorado River drainage, including Gila River.	No suitable habitat; outside of known range.
Yaqui Catfish *Ictalurus pricei*	T	Yes	An inhabitant of ponds, streams, and rivers. A bottom feeder of fish, invertebrates, plants, and detritus.	No suitable habitat; outside of known range.
Desert Pupfish *Cyprinodon macularius*	E NEP	Yes	Formerly from below sea level to 4,950 feet elevation along margins of small to large streams and isolated springs of lower Gila River basin. Tolerates saline water and high temperatures.	No suitable habitat.
Gila Topminnow *Poeciliopsis occidentalis*	E NEP	No	Below 4,500 feet elevation, currently restricted to small streams, springs, cienegas, and vegetated shallows in Gila River basin. Occurs in shallow water in or near heavy vegetation.	No suitable habitat.
INVERTEBRATES				
Huachuca Woodlandsnail *Ashmunella levettei*	12MR	N/A	Habitat needs unknown, but project will remain at lower elevations than those that support terrestrial snails.	No suitable habitat; outside of known range.
Notodontid Moth *Astylis* sp. 1	12MR	N/A	Ash Canyon, in the southern Huachuca Mountains, Arizona.	No suitable habitat; outside of known range.
Notodontid Moth *Heterocampa* sp. 1	12MR	N/A	Ash and Garden canyons in the Huachuca Mountains and in the Atascosa Mountains, Arizona.	No suitable habitat; outside of known range.
Notodontid Moth *Litodonta* sp. 1	12MR	N/A	Upper Pinery Canyon, in the western Chiricahua Mountains, Arizona.	No suitable habitat; outside of known range.
Bylas Springsnail *Pyrgulopsis arizonae*	12MR	N/A	Occurs in the warm springs near the Gila River, downstream from Pima, Arizona.	No suitable habitat; outside of known range.
San Bernardino Springsnail *Pyrgulopsis bernardina*	C	N/A	Occurs in Arizona only at Snail Spring on the Slaughter Ranch and Tule Spring on San Bernardino National Wildlife Refuge; also occurs in Mexico.	No suitable habitat; outside of known range.
Huachuca Springsnail *Pyrgulopsis thompsoni*	C	N/A	Springs in southern Santa Cruz and Cochise counties, Arizona, and northern Sonora, Mexico.	No suitable habitat; outside of known range.
Pinaleño Talussnail *Sonorella grahamensis*	12MR	N/A	High elevations in and near Wet Canyon in the Pinaleño Mountains, Arizona.	No suitable habitat; outside of known range.

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat**	**Discussed in Text or Reason for Exclusion**
Wet Canyon Talussnail *Sonorella macrophallus*	12MR	N/A	High elevations in and near Wet Canyon in the Pinaleño Mountains, Arizona.	No suitable habitat; outside of known range.
Gila Tryonia *Tryonia gilae*	12MR	N/A	Occurs in warm springs near the Gila River downstream from Pima, Arizona.	No suitable habitat; outside of known range.
PLANTS				
Huachuca milk-vetch *Astragalus hypoxylus*	12MR	N/A	Middle elevations in the Huachuca and Patagonia Mountains, Arizona.	No suitable habitat; outside of known range.
Cochise pincushion cactus *Coryphantha robbinsorum*	T	No	Flattened ridge tops on bedrock and gravelly limestone substrate in the transition zone between Chihuahuan desertscrub and semidesert grassland habitats.	Outside of the known range of the species.
Pima pineapple cactus *Coryphantha scheeri* var. *robustispina*	E	No	Sonoran desertscrub or semidesert grassland to 4,000 feet.	Outside of the known range of the species.
Lemmon fleabane *Erigeron lemmonii*	C	N/A	Known only from Scheelite Canyon in the Huachuca Mountains. Occurs in shady habitat of bedrock crevices from 6,300 to 7,300 feet elevation.	No suitable habitat; outside of known range.
Fish Creek fleabane *Erigeron piscaticus*	12MR	N/A	Stream corridors in montane canyons. Historically in the Superstition Mountains, with last known population in Oak Canyon, a tributary of Aravaipa Creek, Arizona.	No suitable habitat; outside of known range.
Huachuca water umbel *Lilaeopsis schaffneriana* var. *recurva*	E	Yes	Shallow water or saturated soils at springs, seeps, or edges of streams between 4,000 and 6,500 feet elevation in the San Pedro and Santa Cruz River drainages.	No suitable habitat; outside of known range.
Chihuahua scurfpea *Pediomelum pentaphyllum*	12MR	N/A	Mesquite and creosotebush-dominated floodplains in intermountain valleys in the Chihuahuan Desert. Known from very few isolated populations.	Yes
Arizona cliffrose *Purshia* (*Cowania*) *subintegra*	E	No	Occurs on Tertiary limestone lake bed deposits of the Verde Valley Formation in Sonoran desertscrub habitat to 4,000 feet.	No suitable habitat; outside of known range.
Canelo Hills ladies' tresses *Spiranthes delitescens*	E	No	Wetland meadows associated with sedges and grasses; 4,000 to 5,000 feet elevation.	No suitable habitat; outside of known range.

Species Discussions

The species discussed below are those that have known records in or near the project area, those with habitat preferences similar to habitats occurring within the project area, and species with high dispersal abilities that could travel into the project area. Following are acronyms used for agency status of species with protection or special consideration from federal or state agencies beyond listing under the ESA of 1973, as amended. All bird species discussed are also protected under the Migratory Bird Treaty Act of 1918.

- WSC: Wildlife Species of Concern, Arizona
- HSP: Highly Safeguarded Plant Species, Arizona
- PVS: Priority Vulnerable Species, Pima County Sonoran Desert Conservation Plan
- BLMS: Sensitive Species, U.S. Bureau of Land Management
- BCC: Birds of Conservation Concern, U.S. Fish and Wildlife Service
- FSS: Sensitive Species, U.S. Forest Service
- CITES I or II: Convention on International Trade in Endangered Species of Wild Flora and Fauna, Appendices (2009)

Mammals

Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*)

Status

The Lesser Long-nosed Bat was listed as endangered under the ESA on September 30, 1988 (USFWS 1988) as *L. sanborni*, later changed to *L. curasoae yerbabuenae* when *L. sanborni* was found to be a junior synonym (Arita and Humphrey 1988). Current taxonomy indicates separation of *L. curasoae* from *L. yerbabuenae*, with *L. yerbabuenae* being the listed entity in the United States. (Cole and Wilson 2006). However, the USFWS recognizes the subspecies status of the bat at present. A recovery plan was published in May 1994 (USFWS 1994), and a 5-year review was completed in February 2007 (USFWS 2007a). There is no designated critical habitat for the species. Other protections include: WSC, FSS, and PVS.

Distribution

The Lesser Long-nosed Bat ranges from Honduras along the Gulf Coast to near south Texas, and north along the Sierra Madre Occidental into the southwestern United States (Cole and Wilson 2006). In New Mexico, the species apparently only occurs in Hidalgo County, where it is recorded from roosts in the Peloncillo and Animas mountains (Findley et al 1975; USFWS 2007a). The bat is also found across portions of southern Arizona as far west as Organ Pipe Cactus National Monument, and migrates south, in fall and winter, out of the United States and into Mexico and Central America (Rojas-Martinez et al. 1999).

At the time of listing, populations of this species were believed to be declining rapidly. However, there was subsequent debate about the actual status and trends in the population (Cockrum and Petryszyn 1991). Discoveries of additional roosts and more information on the species' biology indicate declines may not have been as severe as first believed (USFWS 2007a). The bats also switch roosts in response to disturbance, and migration patterns are variable between years and regionally (Rojas-Martinez et al. 1999), further confounding observations of population trends. The recommendation of the 5-year review was a downlisting of the species from endangered to threatened status (USFWS 2007a), but a proposed rule to do so has not been published.

Habitat and Life History

Lesser Long-nosed Bats in the southern portion of their range may be resident and migrate following nectar resources, while bats in central Mexico migrate into the United States following agave and columnar cactus blooms. There may be two separate migratory populations reaching the United States (Wilkinson and Fleming 1996). Bloom patterns and intensity vary with yearly rainfall, leading to variation in bat migration patterns (Rojas-Martinez et al. 1999). Lesser Long-nosed Bats may share roosts with other species (Arita 1993), and form colonies ranging from hundreds to greater than 10,000 individuals throughout their range (Ceballos et al. 1997; Fleming et al. 1996; Fleming et al. 1998). The bats normally roost and have maternity colonies in caves or in abandoned mines (Hoffmeister 1986).

In the United States, the Lesser Long-nosed Bats feed primarily on pollen and nectar of agaves (*Agave* spp.), saguaro (*Carnegiea gigantea*), and organ pipe cactus (*Stenocereus thurberi*), but also feed on fruits and seeds of those cacti (Hinman and Snow 2003; Hoffmeister 1986). These bats serve as important pollinators and seed-dispersers for columnar cacti and agaves (Fleming et al. 1996). Habitats supporting food plants for the species include Sonoran desertscrub and semidesert grassland, particularly where grasslands intergrade with oak woodlands and large numbers of agaves occur.

Lesser Long-nosed Bats apparently have a bimodal reproduction season in the southern portion of their range, with females giving birth to a single young in November and December and again in May and June (Stoner et al. 2003). Bats in Arizona give birth in May and June (Hoffmeister 1986). Despite the large colony sizes, there are apparently no cooperative roosting behaviors such as nursing or food sharing, unlike many bat species (Fleming et al. 1998).

Threats to the Survival of the Lesser Long-nosed Bat

Threats to the Lesser Long-nosed Bat include disturbance or killing of bats at roosts (particularly at maternity colonies), and loss of food plant sources due to land alteration, primarily for agriculture (USFWS 2007a). Agaves may be removed during land-clearing or they may be harvested prior to blooming in Mexico. However, in the mountains around the project area, agaves may not be a limiting factor to the potential presence of the bats (Scott 2004). Development of land over large areas along migratory corridors may result in habitat fragmentation.

Jaguar (*Panthera onca*)

Status

The Jaguar was protected in 1972 (USFWS 1972) only as a foreign endangered species under the Endangered Species Preservation Act of 1966, and carried over as endangered to the ESA upon its passage. In 1997, after two sightings in the Southwest, the listing was modified to specifically extend ESA protection to Jaguars in the United States (USFWS 1997), where it is now also listed as endangered. No critical habitat was designated, and no recovery plan was completed after determination by the USFWS during the listing process that neither action would be prudent or contribute to the survival of the species. A court decision required the USFWS to revisit that determination and initiate the recovery plan and critical habitat determination processes (Center for Biological Diversity [CBD] vs. Kempthorne 2009). The USFWS is preparing a proposed critical habitat rule for the Jaguar, anticipated in January 2011 (USFWS 2010). Other protections include: WSC, CITES I.

Distribution

The Jaguar is currently found from the United States border with Mexico, in the states of Arizona and New Mexico, through much of Central America to northern Argentina. The current occupied area represents approximately 46 percent of former range (Sanderson et al. 2002). The historic range of the Jaguar included its present range in South America, and extended much farther into the United States, with Jaguars present throughout middle elevations in most of Arizona (Hoffmeister 1986), New Mexico (Brown 1983), and portions of west Texas. Some occasional individuals were reported from Southern California east to Louisiana, summarized in the 1997 listing rule. In the 1990s, Jaguars were reliably reported on a small number of occasions far north of the international border in New Mexico and Arizona (CBD vs. Kempthorne 2009), and there have been a number of sightings and photographs in Arizona over the last 15 years (McCain and Childs 2008). Following the death of the only known Jaguar in the states in March of 2009, none are currently confirmed to be present in the United States.

Habitat and Life History

Jaguar habitat outside of the United States can include nearly all warm Neotropical areas with the exception of highly arid regions. Tropical rainforest, coastal plains, savannahs, wetlands, and montane canyons and woodlands are heavily used. In the United States, Jaguars are found in varied habitats, including Madrean evergreen woodlands, semidesert grassland, desertscrub, and pine-oak woodland (McCain and Childs 2008).

Male Jaguars have very large home ranges and engage in long-distance dispersal, leading to the occasionally reported individuals far outside of the typical breeding range of the species. One of the recent Jaguars in Arizona was found to use an area of 1,359 square kilometers, including valley areas likely used only for dispersal (McCain and Childs 2008). Jaguars in a breeding population in northern Sonora, Mexico were estimated to have a density of one Jaguar/100 square kilometers (Rosas-Rosas 2006). Home ranges are much smaller in productive tropical habitats (Seymour 1989). Females do not travel as far, and the last female confirmed

from the United States was in 1963. Both records and habitat modeling indicate that Jaguar establishment with reproduction could occur in the United States, but female range would likely be restricted to mountains of the Madrean archipelago and a narrow band of the Mogollon Rim (Boydston and Lopez Gonzalez 2005).

One to four young are born, generally in late spring or summer in the northern portion of their range (Seymour 1989). Pairs are not monogamous, but may cooperate while raising a litter of young. Large mammals are the primary diet items for the species, but medium-sized prey including mammals, birds, and reptiles may be taken incidentally. In the United States and Sonora, White-tailed Deer, Mule Deer, and Collared Peccaries are likely the primary food species. Livestock may also be taken (Rosas-Rosas 2006).

Threats to the Survival of the Jaguar

The primary cited threat to Jaguars range-wide is intentional take by humans for sport, the fur trade, or for predator control and public safety interests. Hunting is apparently the factor that resulted in their extirpation from the United States through the middle part of the twentieth century (Brown 1983). Additionally, Jaguars appear to be more sensitive to human disturbance than most other New World cat species, and so are sensitive to fragmentation and require relatively large blocks of intact habitat. In the semi-arid Southwest, inclusion of water or riparian areas in home ranges is particularly important. In the United States, the construction of a human-proof border barrier will also act to prevent Jaguar dispersal into the United States from Mexico if built through important border crossings for the species (McCain and Childs 2008; Echemendia 2009).

Birds

Bald Eagle (Sonoran Desert DPS) (*Haliaeetus leucocephalus*)

Status

The Southern Bald Eagle (*H. l. leucocephalus*) was listed as endangered in the United States south of the 40th parallel on March 11, 1967 (USFWS 1967), under the Endangered Species Preservation Act of 1966. The entire species was listed as endangered in 1978, with the exception of five northern states where it was listed as threatened (USFWS 1978). No critical habitat was designated. A recovery plan for the southwestern populations of the Bald Eagle was released by the USFWS on September 8, 1982 (USFWS 1982). On July 12, 1995, the Bald Eagle status was downlisted from endangered to threatened in all of the lower 48 states (USFWS 1995), and the species was delisted on July 9, 2007 (USFWS 2007b).

The Sonoran Desert Distinct Population Segment (DPS) was petitioned for a separate listing rule in 2004 (CBD 2004), but was delisted with the entire species in 2007. The Sonoran DPS was re-listed as threatened on March 6, 2008 under court order (USFWS 2008a), pending completion of a status review which is ongoing (USFWS 2008b). The Bald Eagle receives further federal protection under the Bald and Golden Eagle Protection Act. Other protections include: WSC, BLMS, BCC, and CITES II.

Distribution

The Bald Eagle occurs widely across nearly all of North America, except in large areas of the Chihuahuan Desert with no large permanent water sources, and portions of far northern Alaska and Canada. The Sonoran Desert DPS designation includes a large portion of central Arizona, including the Graham County portion of the study area. Eagles in the DPS are resident primarily along rivers in the central part of the state, particularly along the Salt and Verde rivers, although the listing also covers migratory, non-breeding eagles occurring within the DPS bounds. A few nesting pairs occur on the Little Colorado, Gila, Agua Fria, San Pedro, and Bill Williams rivers (Corman and Wise-Gervais 2005; Hunt 1998).

Habitat and Life History

Bald Eagles are opportunistic feeders. Fish make up the majority of the diet for many Bald Eagles, although water birds can also be an important food source. Bald Eagles also consume mammals, shellfish, and carrion (Hunt 1998; Hunt et al. 1992; Wheeler 2003).

The Bald Eagle breeds on seacoasts, rivers, swamps, and large lakes locally in the interior of North America. Important Bald Eagle breeding areas include the Great Lakes, Pacific Northwest, northern Rockies, and parts of the Atlantic and Gulf coasts (USFWS 2009a). Approximately 200 to 250 Bald Eagles winter in Arizona, primarily in the Flagstaff and Colorado River regions, and approximately 50 to 60 pairs breed in the DPS (Arizona Game and Fish Department [AZGFD] 1996; CBD 2004).

Sonoran Bald Eagles occur in Arizona at lakes, reservoirs, and along perennial rivers. Large riparian trees (typically sycamore, cottonwoods, or willows), and cliffs are important structures used for nesting and perching. Most nests of the Sonoran Desert DPS of the Bald Eagle are in low-elevation desert riparian corridors over an elevational range of approximately 1,000 to 5,600 feet (CBD 2004), and as with Bald Eagles elsewhere, nests may be used for years or decades. Nests must be within foraging range of rivers or lakes with large fish present. Nests have been found up to 1,800 meters (5,900 feet) from water, but the average distance to water is 200 meters (660 feet) (Hunt et al. 1992).

Threats to the Survival of the Bald Eagle

Increasing human population and increasing recreational use of breeding and wintering grounds may threaten Bald Eagles. Of 13 documented fatalities of breeding Bald Eagles in Arizona between 1987 and 1993, 5 were the result of shooting (Driscoll et al. 1999). Breeding eagles may be disturbed by human activities, such as construction, low aircraft flights, or aquatic recreation near nest sites (USFWS 1982).

Bald Eagles may also be affected by the loss of riparian habitat that provides potential nesting and perching locations. River impoundments have inundated large reaches of riparian vegetation, livestock grazing has inhibited the regeneration of riparian tree species, and consumption of water for human uses has lowered water tables and dewatered riparian areas (Hunt et al. 1992; USFWS 1982). River impoundments may also benefit eagles by creating habitat for prey,

including aquatic birds and exotic fish. However, some exotic fish species may mature to a size beyond the capture ability of Bald Eagles, and through competition with and predation on smaller native fish, those fish may reduce the overall amount of suitable prey present (AZGFD 2006).

Transmission lines and towers also pose a collision and electrocution hazard to birds, including Bald Eagles (Lehman 2001). Appropriate tower design can mitigate or eliminate electrocution risk (Avian Power Line Action Committee [APLIC] 2006), and line siting can influence rates of Bald Eagle collisions. Mojica et al. (2009) found that power lines close to shorelines of water used by foraging eagles increased rates of collision. Exposed lines located in regular eagle flight corridors (e.g., between nests and foraging sites) also pose a high risk to Bald Eagles, even when the lines are away from water and not located near high vegetation that would redirect eagle flight.

Northern Aplomado Falcon (*Falco femoralis septentrionalis*)

Status

The Northern Aplomado Falcon was listed as an endangered species under the ESA on February 25, 1986 (USFWS 1986). There is no designated critical habitat for the Northern Aplomado Falcon. The USFWS released a plan to re-establish the Aplomado Falcon in former range in southern New Mexico and Arizona on July 26, 2006 (USFWS 2006a). The introduction is a Nonessential Experimental Population established under the 10(j) rule of the ESA. Other protections include: NME, WSC, and CITES II.

Distribution

Aplomado Falcons historically ranged from the southern tip of South America north to the southwestern United States, where the species occurred at the northern extent of its range in west Texas, south-central New Mexico, and southeastern Arizona (Keddy-Hector 2000). The range of the species rapidly retracted from the United States to Mexico in the late nineteenth century, with only rare sightings through most of the twentieth century. Birds currently occurring in the United States are rare vagrants from northern Mexico, where the birds still occur in the Chihuahuan Desert, or re-established populations from captive-reared birds in Texas and northern Mexico (Keddy-Hector 2000). Prior to the establishment of the NEP, the only recent record of reproduction in Arizona or New Mexico was a single pair that fledged three young in 2002 in Luna County, New Mexico (Meyer and Williams 2005).

Habitat and Life History

The Aplomado Falcon occurs in desert grasslands in North America, and prefers open, low-cover areas. The presence of shrubs and stem succulents such as yuccas are important to provide nest locations and support prey species, but areas of generally low ground cover are preferred for foraging (Macias-Duarte et al. 2004; Young et al. 2004).

Aplomado Falcons exhibit strong pair-bonding, are often observed together, and they will hunt cooperatively (Hector 1986). The falcon is a specialist bird predator (Montoya et al. 1997; Hector 1985), but insects are commonly taken, and occasionally other prey items include bats, rodents, lizards, frogs, and fish (Ehrlich et al. 1988). Some non-avian prey items may be stolen from other raptors rather than captured by the falcons themselves (Hector 1985). They are strong fliers in pursuit of prey, and are effective at hunting on the ground as well (Keddy-Hector 2000).

Aplomado Falcons do not construct their own nest but modify old stick platforms placed in trees by other bird species, particularly those of other raptors or large corvids (Keddy-Hector 2000; Young et al. 2004). Nests are often high in soaptree yuccas (*Yucca elata*) in the Chihuahuan Desert, but are also occasionally in other yuccas, mesquites, or other woody plants (Montoya et al. 1997). They produce two to four eggs that are laid as early as January through May (Macias-Duarte et al. 2004).

Threats to the Survival of the Aplomado Falcon

Habitat alteration and loss appeared to drive Aplomado Falcon declines during the twentieth century. Although moderate grazing may have aided Aplomado Falcons by reducing cover for prey, heavy overgrazing reduced overall prey numbers. Shrub invasion of grasslands, adding very high cover to falcon prey, was driven by reduced fire frequency and also possibly by the removal of Black-tailed Prairie Dogs (Truett 2002). In addition to the shrub-clipping behavior of prairie dogs, bird and rodent densities can be higher in prairie dog towns (Agnew et al. 1986), which may provide a greater prey base for the falcons.

The organochlorine pesticides DDT and DDT-derived DDE were widely used globally through much of the twentieth century, and were found to be responsible for eggshell thinning that caused high rates of nest failure, with the strongest impacts on raptors and seabirds. Agricultural use of DDT ceased in the United States in 1972, and in Mexico in 2000 (USFWS 2006b). Risk of eggshell thinning appears to be decreasing with time as a result of reductions in pesticide use. Although some prey bird species in the Lower Rio Grande Valley in Texas were found to have DDT/DDE levels that could potentially cause eggshell thinning, sampled Aplomado Falcon eggshells from the area were of normal thickness (Mora et al. 1997). DDE levels were somewhat higher in Mexico where use of the pesticides ceased much more recently (Mora et al. 2008), but DDT/DDE levels in potential prey in Arizona were lower than those detected in Texas and much lower than the presumed biologically significant level (King et al. 1995).

Sprague's Pipit (*Anthus spragueii*)

Status

The Sprague's Pipit was petitioned for listing under the ESA in 2008 (WildEarth Guardians 2008a). The USFWS 90-day finding indicated that the listing may be warranted, initiating a 12-month status review of the species in December 2009 (USFWS 2009b). Other protections include: BLMS, WSC.

Distribution

Sprague's Pipits nest in the prairie potholes region of the northern Great Plains, primarily concentrated from Alberta to North Dakota. The central Great Plains is a region used as a migratory route, and the birds winter from northern Texas south, approximately to Mexico City. The wintering range extends westward into southern New Mexico and Arizona (Robbins and Dale 1999).

Habitat and Life History

The Sprague's Pipit is an obligate grassland bird species, particularly in the breeding range. Wintering sites are primarily shortgrass prairie and semidesert grasslands, but the species may be found in Sonoran (Phillips and Amadon 1952) and Chihuahuan desertscrub (Garcia-Salas et al. 1995) as well. Summer range is concentrated in the glacially-formed prairie potholes region, historically a matrix of small lakes and grassland now heavily converted to agriculture. Pipits choose sites with intermediate levels of cover within grasslands, avoiding complete ground coverage or large open areas (Schneider 1998; Sutter and Brigham 1998). The species is largely insectivorous, but may occasionally consume grass seeds (Ehrlich et al. 1988).

Male Sprague's Pipits are territorial, and perform long courtship displays. Males fly to a height of approximately 500 feet, and descend while singing (Robbins 1998). Displays may last 10 minutes to 3 hours, and are the longest recorded aerial displays by passerines. Sprague's Pipits appear to be monogamous within each nesting season (Ehrlich et al. 1988).

Sprague's Pipits build enclosed, grassy nests on the ground, using existing dead vegetation to build a domed nest with a covered entrance. Nest structure reduces exposure to predators and may provide protection from high temperatures and solar radiation (Sutter 1997). Females lay clutches of four to five eggs in May (Ehrlich et al. 1988), with fledging taking place in 25 to 30 days. Nest predation is high in grassland birds, with up to 70 percent of nests lost and similar failure rates in pipits (Davis 2003). Important predators are raptors, crows, and rodents (Davis and Fisher 2009). Sprague's Pipits may produce multiple clutches if one is lost to predators (Sutter et al. 1996). After fledging, juveniles remain in cover near the nest for 2 to 4 weeks (Davis and Fisher 2009).

Threats to the Survival of the Sprague's Pipit

Direct loss of much prairie habitat through conversion to agriculture greatly reduced total nesting habitat available for Sprague's Pipits, including in desert grasslands used in winter (Desmond et al. 2005). Although moderate grazing may not be directly detrimental (and may sometimes be beneficial) to Sprague's Pipits, as they prefer relatively short grass (Madden et al. 2000), cattle grazing may have some negative indirect effects on the species through its differences from natural Bison grazing in animal density and foraging patterns (Lueders et al. 2006). Some introduced range grass species create unsuitable nesting conditions for Sprague's Pipits, even in "natural" prairie (Sutter and Brigham 1998).

Pipits that nest in hayfields or other harvested areas may suffer nest or fledgling loss if mowing or harvesting takes place during the nesting season (Dale et al. 1997). However, the absence of fire, grazing, or mowing allows grass growth and shrub invasion not preferred by pipits (Schneider 1998; Madden et al. 1999). Sprague's Pipits avoid roads and habitat edges (Sutter et al. 2000), prefer large tracts of intact natural grassland, and so are sensitive to habitat fragmentation (Davis 2004). Drought, potentially exacerbated by climate change, may cause nest failure due to high temperatures or lower productivity, or may induce pipits to not attempt nesting (George et al. 1992).

Nest parasitism by Brown-headed Cowbirds (*Molothrus ater*) occurs (Davis 2003), particularly as cowbird populations have increased facilitated by increasing habitat fragmentation and conversion to agriculture. However, pipits may be lower-quality cowbird hosts relative to some species, with parasitism rates ranging from 0 to 18 percent and relatively low survival of cowbird young (Shaffer et al. 2003).

Amphibians

Chiricahua Leopard Frog (*Lithobates* [*Rana*] *chiricahuensis*)

Status

The Chiricahua Leopard Frog was listed as a threatened species by the USFWS on June 13, 2002 (USFWS 2002). No critical habitat has been designated for the species. A 5-year review of the species was initiated in 2007 (USFWS 2007c). A recovery plan for the Chiricahua Leopard Frog was released on June 4, 2007 (USFWS 2007c). A statewide Safe Harbor Agreement for private and state land in Arizona has been administered by AZGFD and USFWS (USFWS 2006c). The recently described Ramsey Canyon Leopard Frog (*Lithobates subaquavocalis* [Platz 1993]) was covered under a conservation agreement in lieu of listing, but further evidence failed to support designation as a separate species (Goldberg et al. 2004), and the frog was subsumed into the Chiricahua Leopard Frog both taxonomically and under the ESA (USFWS 2006g; USFWS 2008c). Other protections include: WSC, PVS, and FSS.

Distribution

The Chiricahua Leopard Frog is found in the mountains of central and southeastern Arizona, and adjacent parts of southwestern New Mexico into northeastern Sonora and western Chihuahua in Mexico (Stebbins 2003). The distribution in the United States is disjunct, with a population found throughout the Mogollon Rim in Arizona into west-central New Mexico, and a southern population ranging from several of the "sky island" mountain ranges into the northern Sierra Madre of Mexico. This frog is apparently extirpated from 80 to 85 percent of historic sites, including the Little Colorado River drainage, although it is present in other parts of the Mogollon Rim in streams that drain to the Verde and Salt rivers (USFWS 2007c).

Habitat and Life History

The Chiricahua Leopard Frog is highly aquatic, and it is usually found in rocky streams with deep pools surrounded by oak woodlands, mixed pine-oak woodlands, and pine forests, generally at elevations between 3,500 and 8,530 feet (Stebbins 2003). Historically this species followed streams down into areas of chaparral, grasslands, or deserts, although introduction of non-native predators, coupled with habitat reduction and fragmentation, has nearly eliminated valley stream use in the United States (USFWS 2007c). River overflow pools, oxbows, springs, ponds, and earthen stock tanks may also be utilized (Stebbins 2003).

Adult Chiricahua Leopard Frogs feed primarily on invertebrates, but tadpoles will eat algae, organic debris, plant tissue, and minute aquatic organisms (Sredl and Jennings 2005). Breeding is primarily from late May to August, although this season may be extended at lower elevations (Stebbins 2003).

Threats to the Survival of the Chiricahua Leopard Frog

Major threats to Chiricahua Leopard Frog habitat are fragmentation or habitat loss that results from channelization, water diversions, or groundwater pumping, and changes in stream character due to livestock grazing, mining, and other human activities. Predation on adults and tadpoles by non-native species, including American Bullfrogs (*Lithobates catesbeianus*), Tiger Salamanders (*Ambystoma tigrinum*), crayfish, and fish, can rapidly extirpate native frog populations and exclude them from aquatic sites (Rosen and Schwalbe 1996). Members of the family Centrarchidae (sunfish and bass) are particularly harmful through a combination of their behavior as predators and their widespread stocking in leopard frog habitat (Rosen et al. 1996a), and their apparent facilitation of bullfrog invasions through predation on insect predators of bullfrog tadpoles (Werner and McPeek 1994). Although livestock can have an adverse impact on these frogs by their negative effects on riparian vegetation and soil stability, the stock tanks that are maintained for cattle may benefit the frogs by providing refugia (USFWS 2002). The fungal pathogen *Batrachochytrium dendrobatidis* is implicated in declines or extirpation of Chiricahua Leopard Frog populations in otherwise unmodified habitat (Bradley et al. 2002).

Reptiles

Arizona Striped Whiptail (*Aspidoscelis arizonae*)

Status

The Arizona Striped Whiptail was included in a 2007 petition to list 475 Southwestern species under the ESA that were considered by NatureServe to be globally imperiled (Forest Guardians 2007). The USFWS found that substantial information was available that listing may be warranted for the lizard species, and initiated a 12-month status review in December 2009 (USFWS 2009c). Other protections include: WSC.

Distribution

Arizona Striped Whiptails are currently known from three locations in southeastern Arizona (Sullivan 2009; Sullivan et al. 2005). The species was discovered in 1896, but not observed again until 1962 at a location approximately 40 miles from the type locality (Wright and Lowe 1965). The Willcox Playa area, including dunes and areas near Cochise Lake south of the town of Willcox, is the southernmost extant population center for the species. A population is located in valley bottoms near Bonita, approximately 37 kilometers north of Willcox, and another is located in the Whitlock Valley between the Whitlock Mountains and the western slope of the Peloncillo Mountains (Sullivan et al. 2005).

Habitat and Life History

Arizona Striped Whiptails are restricted to semiarid grasslands in sandy, often saline soils of valley bottoms, generally dominated by alkali sacaton (*Sporobolus airoides*) and saltgrass (*Distichlis spicata*) (Rosen et al. 1998). The Arizona Striped Whiptail was once considered a subspecies of the Little Striped Whiptail (*A. inornatus*) (Wright and Lowe 1993), but has been raised to full species status again (Sullivan et al. 2005) by the USFWS (USFWS 2009c). Little Striped Whiptails, and presumably Arizona Striped Whiptails, benefit from cover provided by burrowing rodents in otherwise open grasslands (Davidson et al. 2008).

Whiptails are diurnal lizards, and are active during high temperatures. Reproduction takes place from May to early July when ovoposition begins, and young hatch during August (Lowe and Goldberg 1970). Clutch size is generally one to three eggs (Sullivan 2009). Adults enter hibernation in September, followed by juveniles slightly later in autumn (Lowe and Goldberg 1970). As with all small whiptail species, the Arizona Striped Whiptail is primarily insectivorous.

Threats to the Survival of the Arizona Striped Whiptail

In its restricted range, human land use has been the primary apparent cause of decline of the Arizona Striped Whiptail. Development and expansion of the town of Willcox has reduced habitat available near Willcox Playa, as has increased agriculture in the area. While development has not impacted the Whitlock Valley population, overgrazing and conversion from grassland to mesquite scrubland has apparently lowered success of the species in competition with the related Tiger Whiptail (*A. tigris*) and unisexual Desert Grassland Whiptail (*A. uniparens*) (Wright and Lowe 1993). The Arizona Striped Whiptail may now be extirpated from the site, or may persist on unsurveyed private land (Sullivan et al. 2005). The trend of declines following shrub or tree encroachment into grassland has been observed elsewhere in closely-related whiptails (Persons 2005), and in the San Simon Valley in other lizards (Brown et al. 1997) and snakes (Mendelson and Jennings 1992).

Northern Mexican Garter Snake (*Thamnophis eques megalops*)

Status

The Northern Mexican Garter Snake was petitioned in 2003 for listing under the ESA (CBD 2003). A 90-day review found that the snake may warrant protection under the ESA (USFWS 2006d), and a 12-month review found that protection is warranted but precluded by higher priorities (USFWS 2008d). The species remains a candidate with a listing priority of 3 (subspecies with high, imminent threats).

Distribution

The Mexican Garter Snake ranges from central and southern Arizona and southwestern New Mexico into central Mexico as far as Oaxaca (Rossman et al. 1996), with several recently-described subspecies occurring in isolated lakes in the transvolcanic belt in central Mexico (Conant 2003). The Northern Mexican Garter Snake is the only subspecies to occur in the United States.

The historic range of the Northern Mexican Garter Snake in the United States included much of the Lower Colorado River and tributaries. The snakes were found into the interior of Arizona throughout permanent streams in the Gila, Verde, San Pedro, Santa Cruz, and Salt River drainages. Extant populations are restricted to upper portions of the Verde, Salt, and Gila rivers; a small population in the San Pedro River; the upper Santa Cruz River; and Cienega Creek, a tributary of the Santa Cruz (CBD 2003).

Habitat and Life History

Mexican Garter Snakes are strongly associated with permanent or near-permanent water sources as adults and juveniles. In the United States' portion of their range, historically most permanent aquatic sites were streams and rivers, although natural or artificial ponds and lakes are used when present. Some valley streams in southeastern Arizona formed cienegas (marshes) that also provided stillwater habitat. Most potential prey species of the Mexican Garter Snakes are aquatic or wetland-associated. Young largely prey on soft-bodied invertebrates such as earthworms and leeches. Adults take invertebrate prey as well as fish, frogs, and occasionally upland prey such as small mammals (Macias-Garcia and Drummond 1988).

Garter snakes give birth to live young, with the Mexican Garter Snake producing clutches of 8 to 12, although larger clutch sizes have been recorded (Manjarrez 1998). Young are born throughout the warm season in central Mexico, but in June and July in the northern portion of their range within the United States, earlier than most other garter snakes (Rossman et al. 1996). Individual females do not appear to reproduce every year.

Threats to the Survival of the Northern Mexican Garter Snake

Young of the Mexican Garter Snake are more highly aquatic than other Southwestern garter snake species, a life history trait that apparently exposes them to the high predation threat posed by large adult American Bullfrogs. Following bullfrog invasion, recruitment of Mexican Garter Snakes may nearly cease (Rosen and Schwalbe 1995). Declines in a suitable prey base, as likely happened to the Mexican Garter Snake with the loss of native leopard frogs, have driven declines and local extirpations in other garter snakes (Matthews et al. 2002). As with many other regional native aquatic species, loss or modification of riparian and wetland habitat has reduced the total habitat available for the Mexican Garter Snake.

Plants

Chihuahua Scurfpea (*Pediomelum pentaphyllum*)

Status

The Chihuahua scurfpea was included in a 2007 petition to list 475 Southwestern species under the ESA that were considered by NatureServe to be globally imperiled (Forest Guardians 2007), and was petitioned separately the following year as well (WildEarth Guardians 2008b). The USFWS found that listing may be warranted for the species, and initiated a 12-month status review in December 2009 (USFWS 2009c). Other protections include: NME, FSS, and BLMS.

Distribution

Collection records for the Chihuahua scurfpea indicate a widespread although apparently patchy distribution through Chihuahuan Desert grasslands, including southeastern Arizona and southern New Mexico into Texas. Records also exist from Mexico. However, only two population centers are known to persist in the Hachita Valley, New Mexico and Sulphur Springs Valley, Arizona (WildEarth Guardians 2008b).

Habitat and Life History

Chihuahua scurfpeas are found in open areas in sandy loam, and sandy clay valley fill soils in Chihuahuan Desert grassland. Optimal habitat and the reason for the current highly restricted range of the species are not well understood, as many areas apparently similar to extant sites are unoccupied by the species (New Mexico Rare Plant Technical Council 2009). The scurfpea blooms in response to spring or summer rains, but will remain dormant supported by a tuberous root and may not emerge during dry years. Detection is difficult when plants are not actively growing or blooming.

Threats to the Survival of the Chihuahua Scurfpea

Although the species was not monitored during much of the twentieth century, the reduction in its range and current status were likely driven by widespread changes in Southwestern grasslands due to rangeland management. Sites with historic records for the scurfpea are now dominated by introduced grass species, and have been invaded by shrubs such as creosote bush and mesquite. Threats to the existing populations include current management practices, including soil disturbance for shrub removal and construction, and herbicide treatment. Natural threats such as fire also pose an increased risk to the species due to the very small population size (WildEarth Guardians 2008b).

EFFECTS OF THE PROJECT

No effects subject to Section 7 consultation can occur for unlisted species undergoing 12-month status reviews, and no determination is included for those species. However, should a proposed or final listing rule for any of those species be published during project development, additional consultation or conference may be necessary.

Lesser Long-nosed Bat

Status of the Species in the Study Area

The nearest available records of the Lesser Long-nosed Bat to the project area are from Fort Bowie National Historic Site, approximately 12 miles south of Bowie (Krebbs 2008), recorded most frequently in late summer. Lesser Long-nosed Bats have been netted in the Pinaleño Mountains, northeast of the project area, at the northern limit of their range in Arizona. No roosts have been recorded in the Pinaleños, although roosts are known from the Galiuro Mountains to the west, within known foraging distance of the general project area. The Pinaleño Mountains are largely igneous rock, lacking limestone caves, and were not heavily mined, so do not provide suitable roost sites for the Lesser Long-nosed Bat.

The Palmer's agave (*Agave palmeri*) is the only potential forage plant present in the project area, present at very low densities in the project area in rockier areas near the Fisher Hills. A 2008 native plant survey performed by EPG estimated four agaves present in the transmission line right-of-way in Graham County. Many more agaves are present at higher elevations in the foothills of the Pinaleños and other surrounding mountains.

Species Response and Mitigation Measures

As roost sites are not known near the project area, and food resources are very low in the project area but abundant elsewhere, we do not anticipate significant use of the project area by Lesser Long-nosed Bats for foraging. However, adequate space exists within the 250-foot right-of-way to avoid destruction of any agave plants during project construction, eliminating any risk of impacts on the bat.

Determinations

Direct Effects

No direct effects on the Lesser Long-nosed Bat would occur as a result of project development. No roosts occur in the project area, and disturbance of forage plants will be avoided.

Indirect Effects

No indirect effects on the Lesser Long-nosed Bat would occur as a result of project development.

Jaguar

Status of the Species and Critical Habitat in the Study Area

No Jaguars are currently known to be present in the United States, although one was recently observed within 30 miles of the Mexican border. One Jaguar was shot in the Dos Cabezas Mountains south of the project area in 1986 (Grigione et al. 2007). Detections of live Jaguars since 1996 have included the Peloncillo Mountains to the east of the project area, and the Pajarito, Atascosa, and Baboquivari mountains in Santa Cruz and Pima counties. All observations have been from montane areas, although Jaguars must disperse across intervening valleys. Preferred dispersal routes and habitats are not known in the United States, but riparian corridors are assumed to be important. Modeling of predicted Jaguar habitat in Arizona identified a corridor between the Dos Cabezas and Pinaleño Mountains passing near the project area as "potentially suitable" (Hatten et al. 2003). Although in very close proximity, no portion of the project area was identified as potentially suitable Jaguar habitat.

Species Response and Mitigation Measures

No evidence indicates that linear utilities such as transmission lines are a barrier to Jaguar movement, as successful dispersal has occurred into and between several mountain ranges in the Southwest with moderate human use of the intervening valleys. The power station and gas line are situated in urban and agricultural areas that would not be used by Jaguars.

Determinations

Direct Effects

No direct effects on the Jaguar would occur as a result of project development. Jaguars do not currently occur in the project area, although if one were detected nearby during construction, consultation with the USFWS may be reinitiated.

Indirect Effects

No indirect effects on the Jaguar would occur as a result of project development. No evidence indicates the completed transmission line or substation would influence Jaguar movements. All other project elements are placed outside of potential Jaguar movement corridors.

Bald Eagle (Sonoran Desert DPS)

Status of the Species in the Study Area

The Graham County portion of the project area is included in the listing for the Sonoran Desert DPS of the Bald Eagle. Any eagles present in Cochise County would not be protected under the ESA, but would be protected under the MBTA and Bald and Golden Eagle Protection Act. No Bald Eagles are reported nesting near the project area, with the nearest approximately 75 miles to the northwest near the town of San Carlos (Southwestern Bald Eagle Management Committee 2009). Bald Eagles migrate and may forage widely. They are most common near water, but may rarely be observed over upland habitat.

Species Response and Mitigation Measures

The possibility exists for Bald Eagles to occur in the project area in Graham County during flyovers, but the project area does not include any habitat features preferred by or essential to Bald Eagles. No permanent water supporting fish exists in the project vicinity, no suitable nest trees occur in the area, and the project area is not located in a flyway between any two habitat features likely to be used by eagles. Further, Southwestern Power Group (SWPG), the project proponent, will follow recommended management practices in facilities design and construction to reduce risk of collision or electrocution with transmission lines (APLIC 2006).

Determinations

Direct Effects

No direct effects on the Sonoran Bald Eagle would occur as a result of project development.

Indirect Effects

No indirect effects on the Sonoran Bald Eagle would occur as a result of project development.

Northern Aplomado Falcon

Status of the Species in the Study Area

There are no recent records of Aplomado Falcons from Arizona. Releases of birds into the NEP are currently all planned to occur in New Mexico, although eventual dispersal into Arizona is

planned and expected. Dispersing Aplomado Falcons could occur in the project area in the future, as it is within their historic range (Corman and Wise-Gervais 2005) and apparently suitable yucca-grassland habitat exists in the project area in a small area near the transmission line midpoint.

Species Response and Mitigation Measures

The transmission line is the only project feature that would be placed in grassland habitat. As no Aplomado Falcons currently use the project area, construction activities would not affect the species unless falcons disperse into the area. If this occurs, SWPG may conduct additional conference with the USFWS, likely to include the following issues.

Power lines are used as perches by raptors, but are unlikely to be a significant benefit to hunting Aplomado Falcons. The grassland birds that are preferred prey cannot apparently be effectively hunted from tall perches (Perez et al. 1996), reducing the frequency of transmission structure use. However, Aplomado Falcons have been observed using raptor nests located on transmission towers (APLIC 2006).

Ground-clearing for project construction could potentially affect areas near Aplomado Falcon nests. Construction in nesting areas should take place outside of Aplomado Falcon nesting season if the species is determined to be present. Aplomado Falcons prefer to use existing nests constructed by other raptor species, and loss of existing nests due to project construction should be avoided. However, large areas of available but unoccupied habitat, coupled with the naturally low densities of Aplomado Falcons, should preclude significant habitat loss-related negative effects of project construction in the small area of affected grassland.

Power lines present an electrocution risk to a wide range of bird species, particularly large birds. The preference of Aplomado Falcons for hunting from low perches may reduce the use of transmission line structures by the falcons. Depending on tower construction, raptors of moderate size such as falcons may also be at risk (Lehman 2001). However, spacing between energized wires and potential grounds on 345kV transmission lines, as will be used for the project, is great enough to eliminate the risk of electrocution for Aplomado Falcons. SWPG will follow recommended management practices in facilities design and construction to reduce risk of collision or electrocution with transmission lines for any raptor species (APLIC 2006).

Determinations

<u>Direct Effects</u>

No direct effects on the Aplomado Falcon would occur as a result of project development. None currently occur in the project area or within Arizona.

Indirect Effects

No indirect effects on the Aplomado Falcon would occur as a result of project development. None currently occur in the project area or within Arizona.

Sprague's Pipit

Status of the Species in the Study Area

Sprague's Pipits are expected to occasionally occur within the project area, as the species winters throughout open grasslands and deserts in southeastern Arizona. Arizona is not part of the breeding range of the species, and any birds occurring in the project area would be adults. The MBTA prohibits any direct take of the Sprague's Pipit.

Species Response and Mitigation Measures

As no nesting occurs in Arizona, project effects on Sprague's Pipits would be limited to disturbance and displacement of any birds present in construction areas in winter, and loss of grassland and desertscrub that would be cleared for tower pads within the transmission line right-of-way and the Willow Switchyard area.

Chiricahua Leopard Frog

Status of the Species in the Study Area

Chiricahua Leopard Frogs occurred historically in the upper San Simon Valley at San Simon Cienega, approximately 33 miles southeast of Bowie, Arizona. This site is now maintained with artificial flow, and the American Bullfrog is present at the site (Rosen et al. 1995). Chiricahua Leopard Frogs are absent. Although portions of the San Simon River nearer the project area were perennial at times, there are no records for the species from locations in the valley bottom other than San Simon Cienega. Chiricahua Leopard Frogs are present in the southern Peloncillo Mountains near the borders of New Mexico, Mexico, and Arizona, and possibly canyons on the northeastern slope of the Pinaleño Mountains (USFWS 2007d). No records exist from the project area or nearby foothills of the Pinaleño Mountains (Clarkson and Rorabaugh 1989). Lack of permanent water appears to have prevented the historic range of the species from including the San Simon Valley near the project area.

Aquatic habitat that could potentially support Chiricahua Leopard Frogs is limited to two stock tanks near the transmission line, and the ponds formed by the Creighton and HX dams in Gold Gulch. While nearly any landowner in the region could enroll in the statewide Safe Harbor Agreement for the Chiricahua Leopard Frog (USFWS 2006c), the aquatic sites in the project area are unlikely to ever be used for translocations. The portion of the valley including the project area does not appear to have supported the species historically, and none of the tanks or ponds currently meets the definition of a "primary site" as necessary to receive translocated frogs under the Safe Harbor Agreement. Primary sites must be permanent and sufficient in extent to support

40 to 50 or more Chiricahua Leopard Frogs as part of a greater metapopulation, or as a more robust single population at an isolated site.

Species Response and Mitigation Measures

No Chiricahua Leopard Frogs are known to be present, and none are expected to be present in the foreseeable future near the project area. Project development would not affect man-made aquatic sites within the project area.

Determinations

Direct Effects

No direct effects on the Chiricahua Leopard Frog would occur as a result of project development.

Indirect Effects

No indirect effects on the Chiricahua Leopard Frog would occur as a result of project development.

Arizona Striped Whiptail

Status of the Species in the Study Area

The Arizona Striped Whiptail has apparently had a very restricted range since its discovery and is currently known from three general areas in Cochise and Graham counties. The Willcox Playa and areas near the town of Willcox appear to support the most extensive population. A population was recently discovered in the Whitlock Valley on the eastern slope of the San Simon Valley, and the third known population is south of the town of Bonita near the northern end of the Sulphur Springs Valley. No known records exist for the project area. However, the project is located roughly within the center of a triangle formed by the three known locations, and is within the elevational range of known locations.

EPG visited the project site and known Arizona Striped Whiptail locations near Willcox Playa and the town of Bonita in February 2010. The project area from the Willow Switchyard along much of the transmission line consists of coarse, gravelly soils and shrub or cactus-dominated Chihuahuan desertscrub. Near agricultural fields north of Bowie and the power station site, soils become finer and more similar to that observed in known whiptail locations. However, nearly all areas within that soil type are either current or fallow agricultural fields. Fallow fields, margins of fields, and areas near roads and the railroad are dominated by subshrubs or invasive Bermuda grass.

Vegetation comparison based on LANDFIRE remote-sensing data at 30-meter resolution (LANDFIRE 2010) shows fragmented grassland remnants along the transmission line (Figure 3).

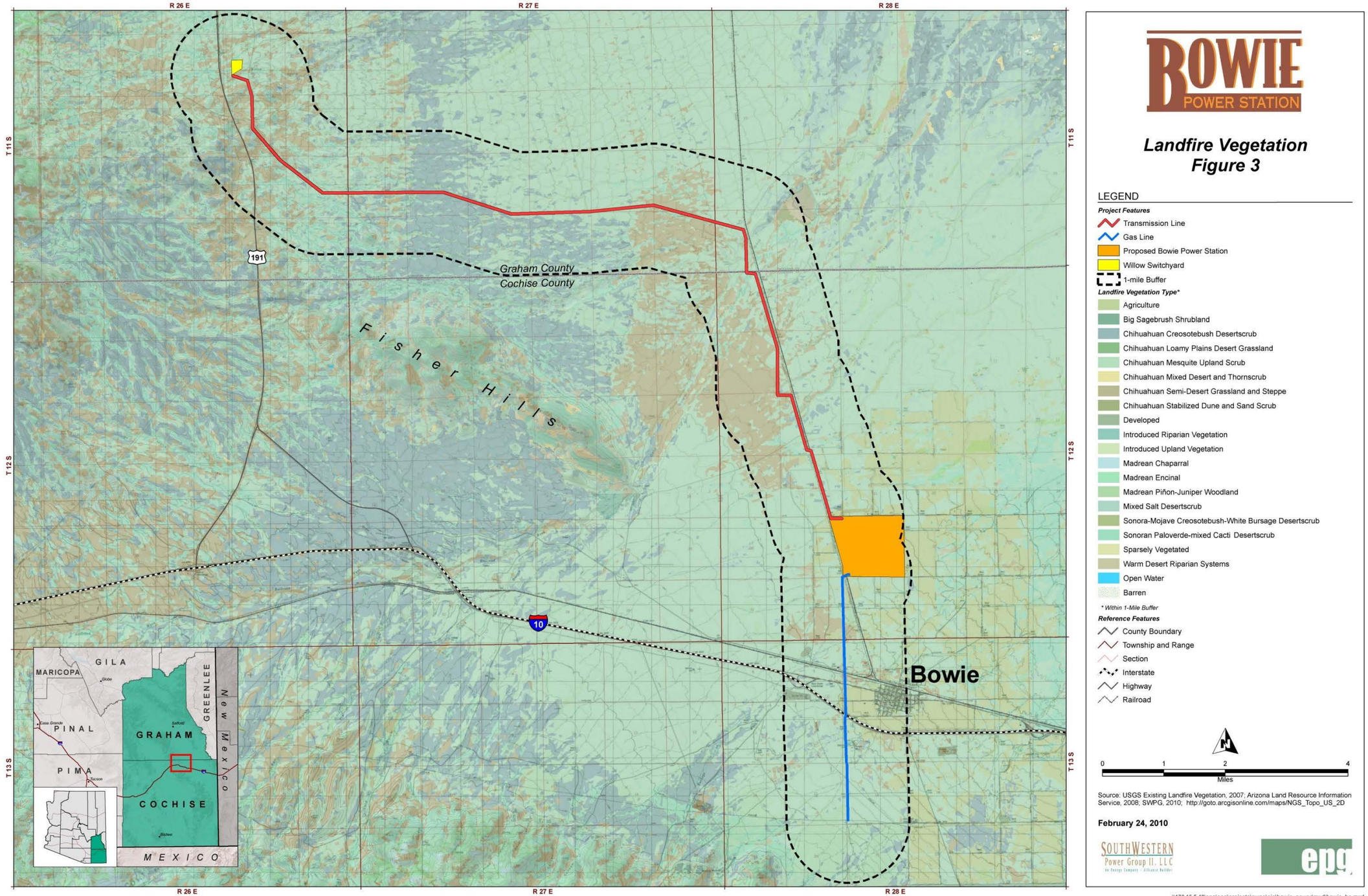

Figure 3. Landfire Vegetation Map

In vegetation surveys by EPG only upland grass species were found. Absent were alkali sacaton and saltgrass—indicators of high-quality habitat (Rosen et al. 1998). Imagery of known Arizona Striped Whiptail locations near Bonita and the Willcox Playa (Figure 4 and Figure 5) shows relatively large areas of contiguous grassland, which EPG's observations confirmed were grass-dominated and in sandy soil with low shrub incursion as described by Sullivan et al. (2005). As no confirmed historic or recent records exist for the area around Bowie, and current habitat conditions appear unsuitable, there is a very low probability of the Arizona Striped Whiptail occurring within the project area.

Species Response and Mitigation Measures

No Arizona Striped Whiptails are expected within the project area. Recovery of natural plant communities may be difficult (Roundy and Jordan 1988; Cox and Jordan 1983), and even if the whiptail was once present near the town of Bowie, sufficient habitat recovery and natural or assisted recolonization near the town is unlikely in the foreseeable future.

Northern Mexican Garter Snake

Status of the Species in the Study Area

The Mexican Garter Snake was present in most major valley streams in southeastern Arizona. The species may have occurred in the San Simon Valley at San Simon Cienega, within its overall range (USFWS 2006d), but where it would currently be excluded by the presence of American Bullfrogs. No historic records exist near the project area, which lacked permanent water, and no populations persist anywhere in the San Simon Valley at present.

Species Response and Mitigation Measures

No Mexican Garter Snakes are present within the project area, and no permanent aquatic sites that may support Mexican Garter Snakes will be impacted by construction.

Determinations

Direct Effects

No direct effects on the Northern Mexican Garter Snake would occur as a result of project development.

Indirect Effects

No indirect effects on the Northern Mexican Garter Snake would occur as a result of project development.

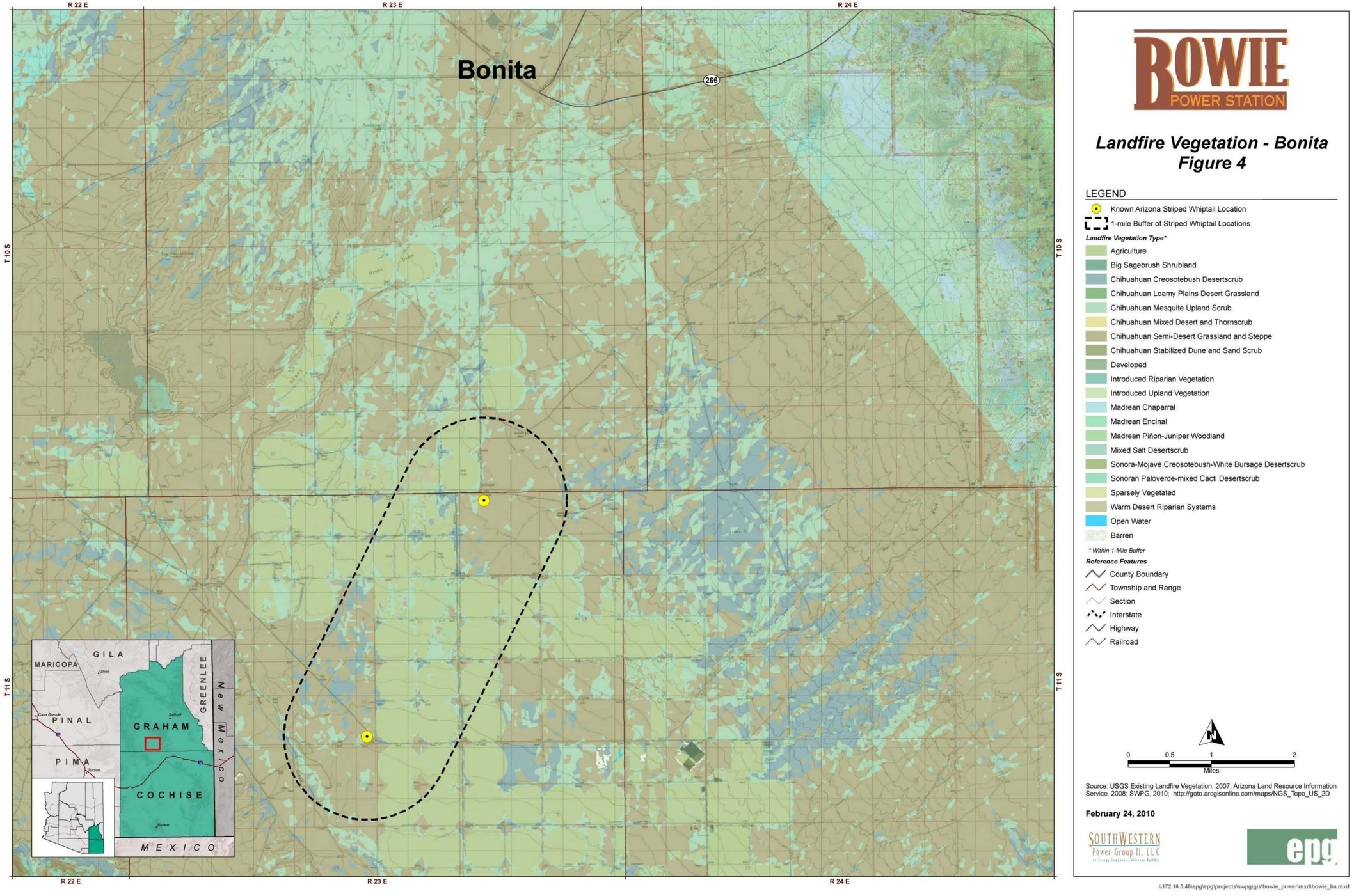

Figure 4. Landfire Vegetation – Bonita

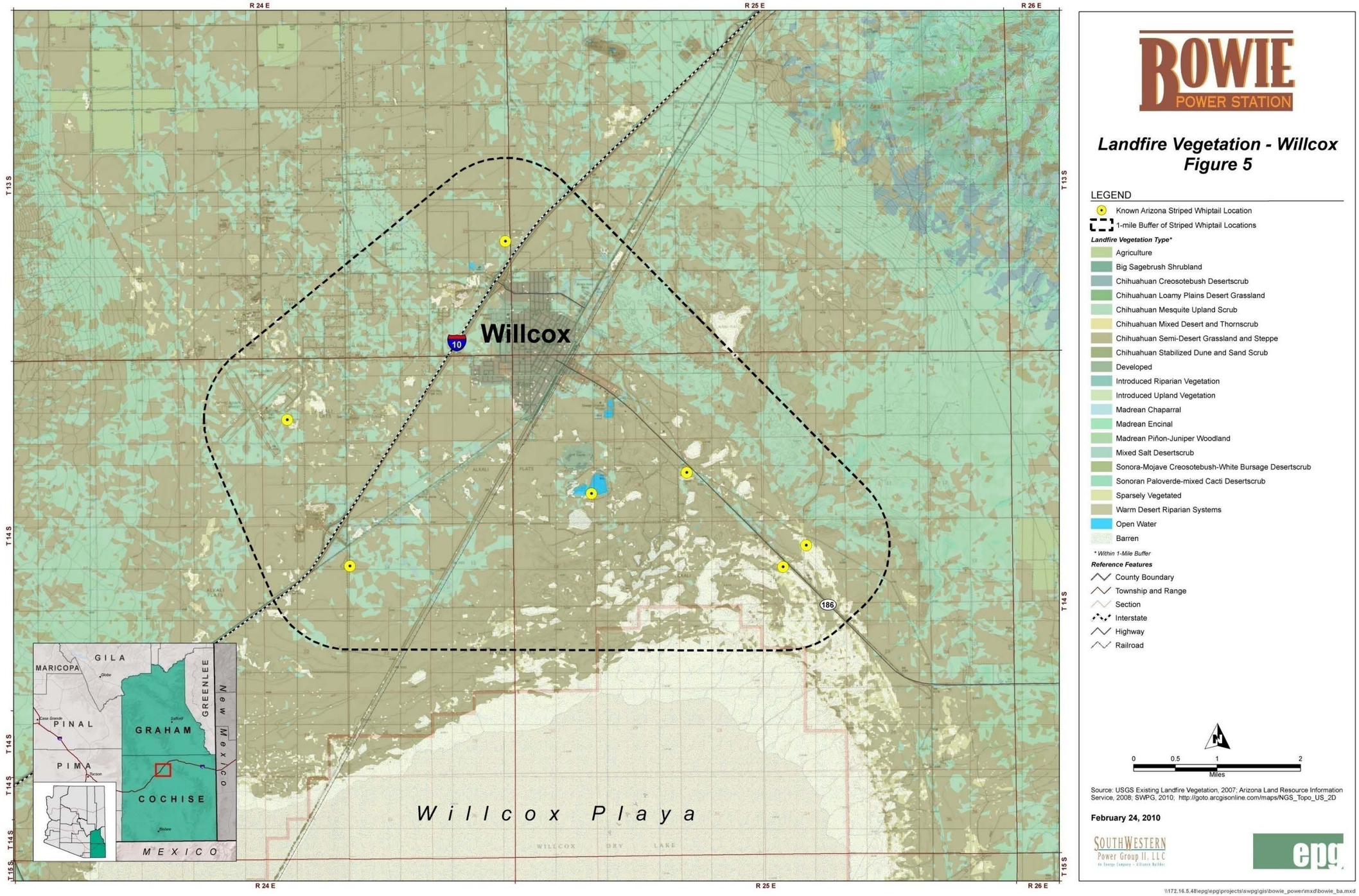

Figure 5. Landfire Vegetation – Willcox

Chihuahua Scurfpea

Status of the Species in the Study Area

One record exists for the Chihuahua scurfpea in the project vicinity, dating from 1936 "near lower end of San Simon Plot" in Graham County, where it was described as common (Wild Earth Guardians 2008). No recent collections have been made from this location, and the species may be extirpated from the San Simon Valley. However, the life history of the plant, emerging from tubers only in response to sufficient summer rain, may make detection difficult. A native plant survey of the project area did not detect the Chihuahua scurfpea, although the surveys took place in January and November of 2007 when detection of the plant may have been difficult. Portions of the project area are grass-dominated and appear to match vegetation in known sites for the species. However, the scurfpea is absent from large areas of apparently suitable habitat regionally. The nearest recent (2006) record to the project area is near Chiricahua National Monument (WEG 2008).

Species Response and Mitigation Measures

The extent of potential habitat that may be lost if the scurfpea occurs within the project area is difficult to assess, due to the uncertainty of the species' requirements and lack of an explanation for its absence from apparently suitable areas. No survey protocol exists for the scurfpea, and the cryptic nature of the plant during most seasons of most years has likely served to limit the information provided by regional plant survey efforts. Best management practices will be followed to prevent the spread of invasive plants and prevent erosion. If a proposed listing rule or a designation of candidate status is issued prior to completion of construction, further conference with the USFWS and additional surveys may be recommended.

CUMULATIVE EFFECTS

The Cochise County Comprehensive Plan Growth Areas and Land Jurisdiction Map indicates planning for future rural residential expansion of Bowie to the northwest and east, largely into areas already impacted by agriculture. Current land use for State Trust land containing the Willow Switchyard and much of the transmission line include grazing and some off-road recreation, and these uses are not expected to change in the foreseeable future. No other major changes to existing land use resulting from state or private actions are expected to occur in the foreseeable future.

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