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**FINAL  
ENVIRONMENTAL ASSESSMENT  
FOR THE PROPOSED TOWN OF PAYSON–CRAGIN WATER PIPELINE  
AND TREATMENT PLANT PROJECT IN GILA COUNTY, ARIZONA**

**VOLUME I OF II**

Prepared for

**U.S. Forest Service  
Tonto National Forest  
Payson Ranger District  
1009 East Highway 260  
Payson, Arizona 85541**

October 2011

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# EXECUTIVE SUMMARY

## Background

The Town of Payson (Town) has applied to the U.S. Department of Agriculture Forest Service (Forest Service) for a utility corridor special use permit for the construction and operation of a proposed water pipeline located on National Forest System (NFS) lands within the Payson Ranger District of the Tonto National Forest (TNF). The project would also require the construction and operation of a water treatment plant (WTP); selection of the WTP location would require, under a separate authorization, purchase of the site via the National Forest Townsite Act if the proposed site is located on TNF public land.

Under the National Environmental Policy Act (NEPA), the TNF must perform an analysis to evaluate and disclose any environmental effects of the project prior to issuing authorizations. The Forest Service must also ensure that any impacts of the project on adjacent lands and/or resources are described and considered in the TNF's decision to issue the utility corridor special use permit.

This EA will also accompany a Feasibility Study being prepared on the proposed project for the Bureau of Reclamation (Reclamation), consistent with the requirements of Reclamation's Rural Water Supply Program. The Town recently received federal funding under the Rural Water Supply Act (August 2010) to prepare the Feasibility Study. If approved by Reclamation, the proposed project would become eligible for additional federal funding assistance for its construction.

The Town has access to 3,000 acre feet (af) per calendar year (average) of surface water from the C.C. Cragin Reservoir as a result of the Arizona Water Settlements Act (AWSA) of 2004, Town agreements with the SRP, and ST-10-001. Northern Gila County has access to an additional 500 af per calendar year. The proposed project is being designed to provide a means to transport and treat surface water to the Town, made available as a result of the AWSA. As noted above, the Town's water allotment from the Salt River Project was authorized at 3,000 af, although the pipeline would have the capacity to transport an additional 500 af of water from the reservoir; total transport capacity would be 3,500 af annually. The use of surface water from C.C. Cragin Reservoir by the Town, along with additional water being made available to others in the region, would provide a more diverse, stable, and renewable supply of potable water for the Central Highlands of Arizona.

## Changes from Scoping to the Draft EA

### *Purpose and Need*

During the initial scoping period (August 2009), the project purpose detailed the need to transport up to 3,000 af (annually) to the Town. Numerous public scoping comments were received asking the Town to consider potential connection offshoots for communities along the pipeline route (e.g., Mesa del Caballo, Whispering Pines, Rim Trails, Wonder Valley, and Freedom Acres). Commenters asked that the proposed project be designed to deliver a total of 3,500 af annually, which would provide area communities with the opportunity to tap into the pipeline and use the remaining 500 af of water from the C.C. Cragin Reservoir at some point in the future. As a result of scoping comments, the project purpose and need were revised. As noted above, the AWSA made available a total of 3,500 af per calendar year (average) to communities in northern Gila County.

### *Proposed Action: Water Treatment Plant*

The Proposed Action presented in scoping was identified as WTP1, located on the east side of Houston Mesa Road, just south of the Shoofly Ruins Interpretive Site. Internal scoping with Forest Specialists and

1 cooperating agency input resulted in development of a revised Proposed Action for the WTP site; WTP2  
2 was subsequently identified as the proposed action in the Draft EA. The WTP2 site, as analyzed in the  
3 Draft EA, is located on the west side of Houston Mesa Road, just north of the Mesa del Caballo  
4 subdivision. The WTP2 site was identified as the proposed action to address agency concerns about the  
5 proximity of WTP1 to the Shoofly Ruins Interpretive Site, while simultaneously allowing Mesa del  
6 Caballo residents access the treated water (pending Mesa del Caballo negotiating and perfecting a water  
7 right from SRP); and would allow for optimal engineering of the topographical conditions at WTP2.

## 8 **Changes from Draft to Final EA**

### 9 ***Proposed Action: Water Treatment Plant***

10 Numerous concerns about the location of the proposed action WTP (WTP2) arose during public comment  
11 on the Draft EA; a member of the public proposed a new WTP location, to be located on the east side of  
12 Houston Mesa Road, southeast of the Mesa del Caballo subdivision; this WTP is called WTP7 and is  
13 analyzed in detail in this EA. WTP7 was proposed to alleviate concerns about impacts from WTP2 to  
14 property value, limiting access to Forest Service lands, and changes in quality of life at Mesa del Caballo.  
15 In the Final EA, WTP7 is the proposed action.

16 Due to the addition of WTP7 and the revising of the proposed action, the descriptive names of WTP1 and  
17 WTP2 were revised to clarify they are no longer considered the proposed action. In this Final EA, WTP1  
18 is identified and named Shoofly South and WTP2 is identified and named Houston Mesa West.

### 19 ***Proposed Action: Pipeline Alternative 2***

20 As a result of the residents of Rim Trail Estates concerns over water pipeline alternative 2, a revision to  
21 water pipeline alternative 2 was identified during the Draft EA public comment period. Commenter's  
22 expressed concerns over the limited construction access and the potential disturbances that would result to  
23 private properties if water pipeline alternative 2 were implemented. Previous excavations for utilities  
24 resulted in substantial surface disturbances and disruptions in access. Therefore, a revised water pipeline  
25 alternative 2 alignment is presented in this Final EA, which avoids Box Elder Lane in Rim Trail Estates.

### 26 ***Staging Areas***

27 At the time of the Draft EA, nine staging areas were proposed. In the spring of 2010, Tonto National  
28 Forest upgraded the recreation facilities at Water Wheel, First, Second, and Third crossings. Due to these  
29 upgrades, using these sites as a staging area is no longer feasible. Therefore, two of the nine staging areas  
30 proposed in the Draft EA (Staging Areas 5 and 6) are not included in this Final EA. The Final EA  
31 includes seven staging areas. Staging Area 7, 8, and 9 as presented in the Draft EA are now Staging Area  
32 5, 6 and 7, respectively.

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2**ACRONYMS AND ABBREVIATIONS**

µg/L	micrograms per liter
µg/m <sup>3</sup>	micrograms per cubic meter
ADA	Arizona Department of Agriculture
ADEQ	Arizona Department of Environmental Quality
ADOC	Arizona Department of Commerce
ADWR	Arizona Department of Water Resources
af	acre-feet
AGFD	Arizona Game and Fish Department
amsl	above mean sea level
APS	Arizona Public Service
ARS	Arizona Revised Statutes
ASR	aquifer storage and recovery
AWSA	Arizona Water Settlements Act
AZPDES	Arizona Pollutant Discharge Elimination System
BAE	biological assessment and evaluation
BMP	best management practice
CFR	Code of Federal Regulations
cfs	cubic feet per second
CLF	Chiricahua leopard frog
CO <sub>2</sub>	carbon dioxide
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
EA	environmental assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission

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FHWA	Federal Highway Administration
Forest Plan	Tonto National Forest Land and Resource Management Plan
Forest Service	U.S. Department of Agriculture Forest Service
FR	Forest Road
GHG	greenhouse gas
GMU	game management unit
HDMS	Heritage Data Management System
ID Team	Interdisciplinary Team
kV	kilovolt
LGVC	Little Green Valley Complex
MIS	management indicator species
ML	Maintenance Level
MSO	Mexican spotted owl
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFS	National Forest System
NGCSD	Northern Gila County Sanitary District
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PAC	Protected Activity Center
PL	Public Law
PM <sub>10</sub>	particulate matter smaller than 10 microns in diameter
psi	pounds per square inch
Reclamation	U.S. Department of the Interior Bureau of Reclamation
ROS	Recreation Opportunity Spectrum

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ROW	right-of-way
SHPO	State Historic Preservation Office
SR	State Route
SRP	Salt River Project
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
TES	Terrestrial Ecosystem
TNF	Tonto National Forest
Town	Town of Payson
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VQO	Visual Quality Objective
WTP	water treatment plant
WWTP	wastewater treatment plant

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## Chapter 1

### PURPOSE AND NEED

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### BACKGROUND AND HISTORY

The Town of Payson (Town) has applied to the U.S. Department of Agriculture Forest Service (Forest Service) for a utility corridor special use permit for the construction and operation of a proposed water pipeline located on National Forest System (NFS) lands within the Payson Ranger District of the Tonto National Forest (TNF). The project would also require the construction and operation of a water treatment plant (WTP); selection of the WTP location would require, under a separate authorization, purchase of the site via the National Forest Townsite Act if the proposed site is located on TNF public land. Under the National Environmental Policy Act (NEPA), the TNF must perform an analysis to evaluate and disclose any environmental effects of the project prior to issuing authorizations. The Forest Service would also ensure that any impacts of the project on adjacent lands and/or resources are described and considered in the TNF's decision to issue the utility corridor special use permit.

The proposed project is being designed to provide a means to transport and treat surface water to the Town, made available as a result of the Arizona Water Settlements Act (AWSA).

The Town of Payson would provide the funding for the project. Additionally, the Town has received federal funding under the Rural Water Supply Act of 2006 (Title I, Public Law [PL] 109-451) to prepare a feasibility study, which, if approved, could make additional federal funding assistance available to the Town for construction of the proposed project. The Rural Water Supply Program is administered by the U.S. Department of the Interior Bureau of Reclamation (Reclamation).

The use of surface water from C.C. Cragin Reservoir by the Town, along with additional water being made available to others in the region, represents a solution to both anticipated and current water shortages in the Central Highlands of Arizona. The Town currently and historically has had its entire water supply needs met through groundwater wells. These wells withdraw water from fractured hardrock aquifers. Groundwater availability is highly dependent on recharge from precipitation. The safe yield for the Town's aquifers, which is the amount of water that can be withdrawn on average every year without permanent depletion of the aquifer, has been estimated at approximately 2,681 acre-feet (af) per year. The Town has experienced the same rapid population growth as much of the rest of Arizona, and since 1999, the annual water demand has been near the safe yield of the aquifer. The Town has implemented strict water restrictions on existing and new water usage in an effort to reduce demand, but the safe yield limits of the available aquifer would eventually be reached. The use of surface water from C.C. Cragin Reservoir would provide a more diverse, stable, and renewable supply of potable water for the community.

### Arizona Water Settlements Act

As a result of years of Congressional efforts that culminated in the AWSA of 2004 (PL 108-451), the communities in northern Gila County, including the Town, were provided the opportunity to access up to 3,500<sup>1</sup> af of surface water from the C.C. Cragin Reservoir (formerly the Blue Ridge Reservoir) per calendar year on average, pursuant to agreements with the Salt River Project (SRP)<sup>2</sup> and the transfer of

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<sup>1</sup> Throughout the document, references to 3,500, 3,000, or 500 af, when used in the context of annual entitlements or diversions from Cragin, mean up to an annual average of those volumes in a calendar year.

<sup>2</sup> In accordance with the AWSA (PL 108-14 451; 118 Stat. 3533), Reclamation holds title to the C.C. Cragin Project (C.C. Cragin Dam, reservoir, pumphouse, pipeline, power line, powerhouse, and other appurtenant facilities), and the SRP was vested with the

1 water rights in accordance with state law. The Town reached an agreement with the SRP for the delivery  
2 of up to 3,000 af of C.C. Cragin water on May 19, 2008, and filed for the severance and transfer of water  
3 rights in accordance with the Arizona Department of Water Resources (ADWR) on February 17, 2009.  
4 The ADWR Director's Decision Order (ST-10-001) was issued on March 5, 2010, granting approval of  
5 the transfer of water rights to the Town, with the condition that the pipeline be completed.

6 The Town's water allotment from the SRP was authorized at 3,000 af, although the pipeline, as described  
7 below under the Proposed Action and also in Chapter 2, would have the capacity to transport an  
8 additional 500 af of water from the reservoir; total transport capacity would be 3,500 af annually.

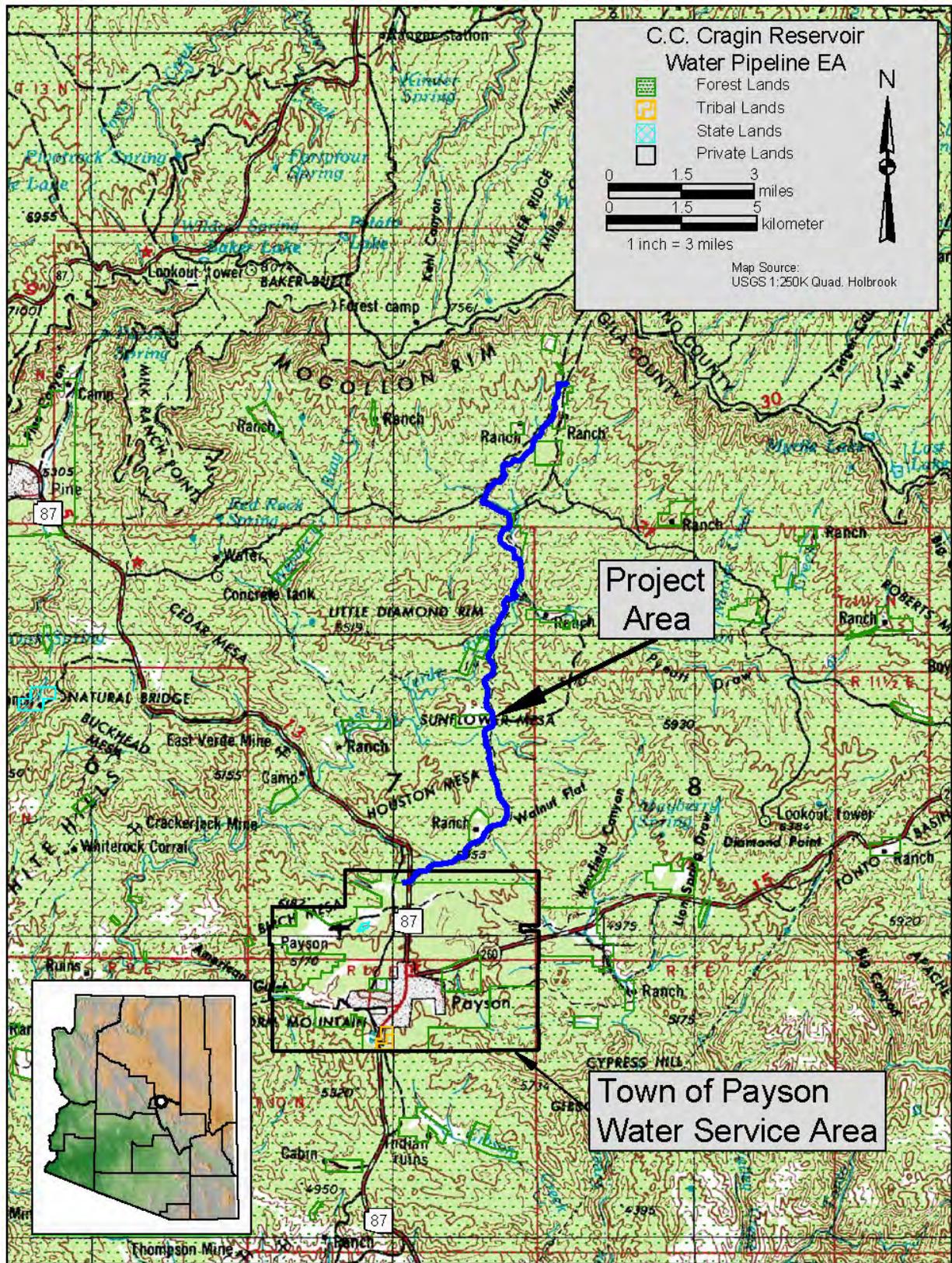
9 The remaining 500-af capacity of the pipeline would be designed to allow surrounding communities the  
10 opportunity to establish connections along the 15-mile-long pipeline in the future. Under the AWSA, up  
11 to 500 af of surface water per calendar year on average from the C.C. Cragin Reservoir are available to  
12 other northern Gila County communities, once the communities have secured a water right from the SRP  
13 and ADWR has approved transfer of water rights. Although the community of Mesa del Caballo has been  
14 discussing securing water rights with SRP, no agreement has been established or finalized; currently,  
15 none of the other surrounding communities have pursued obtaining water rights to access the 500 af  
16 available to northern Gila County communities.

17 Because no existing water rights agreements for area communities are in place, no specific locations for  
18 connections are analyzed in this environmental assessment (EA). This document, and the Proposed  
19 Action described herein, would not authorize these potential future connections. Instead, a brief summary  
20 of potential cumulative impacts that may result from the future connections is included in Chapter 3.

## 21 **LOCATION**

22 The Town's water service area, equivalent to the municipal boundary (Figure 1.1), covers more than  
23 19 square miles and provides drinking water to more than 16,000 people. The existing system includes  
24 production wells, distribution lines, booster-pumping stations, water treatment facilities, and a  
25 groundwater recharge project.

26 The Proposed Action, described in Chapter 2, is located north of the town of Payson along existing Forest  
27 Road (FR) 32B, FR 32 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa Road),  
28 located on the east side of State Route (SR) 87; and West Houston Mesa Road, located on the west side of  
29 SR 87 (see Figure 1.1). The proposed pipeline is located on the Payson Ranger District of the TNF in  
30 Sections 1, 2, 11–14, 23, 24, 26, and 27, Township 11 North, Range 10 East; Sections 24, 25, 35, and  
31 36, Township 11½ North, Range 10 East; and Sections 23, 26, 27, 33, and 34, Township 12 North, Range  
32 10 East (U.S. Geological Survey [USGS] Payson North and Kehl Ridge, Arizona, 7.5-minute  
33 quadrangles). Included in the Proposed Action would be a WTP, also described in Chapter 2.



1  
2 **Figure 1.1.** General location of the project area.

## 1 **FOREST MANAGEMENT DIRECTION**

2 The TNF Land and Resource Management Plan of 1985 (Forest Plan), as amended, provides direction  
3 for all resource management programs on the TNF (Forest Service 1985a). The Forest Plan embodies  
4 the provisions of the National Forest Management Act of 1976 and its implementing regulations.  
5 The proposed water pipeline and treatment plant is consistent with the Forest Plan. Goals, objectives,  
6 and standards specific to resources that could be affected by proposed activities are discussed in Chapter 3  
7 in the Affected Environment and Environmental Consequences sections.

## 8 **FOREST SERVICE HANDBOOK DIRECTION**

9 Forest Service Handbook 2709.11, *Special Uses Handbook* (Forest Service 1992), directs the Forest  
10 Service on how to process special use permit applications. Guidance in the handbook directs the Forest  
11 Service not to create an exclusive or perpetual right of use or occupancy. The Proposed Action would not  
12 in effect grant title to federal land to an authorization holder, nor would it create the appearance of such a  
13 right.

14 Forest Service Handbook 5509.11, *Title Claims, Sales and Grants Handbook* (Forest Service 2003),  
15 directs the Forest Service on how to process land sales under the National Forest Townsite Act. Guidance  
16 in this handbook directs the Forest Service to weigh the conveyance of NFS lands against the community  
17 capability of adequately meeting essential community needs by other means or by acquisition of other  
18 available and equally suitable private or public land.

## 19 **PURPOSE AND NEED FOR ACTION**

20 The purpose of the Proposed Action, as described during initial project scoping, is to issue a special use  
21 permit to the Town to allow for the construction, operation, and maintenance of the proposed water  
22 pipeline that would enable the delivery of potable water to the Town. The project would also require the  
23 construction and operation of a WTP; if the proposed WTP selected is located on TNF public land, the  
24 Town would purchase the public lands, under separate authorization, via the National Forest Townsite  
25 Act. The Town has access to 3,000 af per calendar year (average) of surface water from the C.C. Cragin  
26 Reservoir as a result of the AWSA of 2004, Town agreements with the SRP, and ST-10-001. Northern  
27 Gila County has access to an additional 500 af per calendar year.

28 To use its 3,000-af water right, the Town proposes to construct a pipeline to transport the water from the  
29 terminus of the C.C. Cragin powerhouse tailrace facility to the Town. Lands surrounding the reservoir and  
30 the Town are predominantly NFS lands; therefore, delivering water to the Town would not be possible  
31 without crossing these public lands and would require issuance of a special use permit. Upon  
32 consideration of scoping comments received (see Revised Purpose and Need, below), the capacity of the  
33 pipeline has been increased to accommodate delivery of the entire 3,500 af per calendar year (average)  
34 from the C.C. Cragin Reservoir, which was set aside in the AWSA for use by northern Gila County  
35 communities.

36 As a result of the AWSA, the project is needed because there is currently no mechanism to deliver, or  
37 treat for potable use, C.C. Cragin surface water to the Town or surrounding communities in northern Gila  
38 County. Thus, the Town needs a means to transport its allocated 3,000-af water right from the reservoir to  
39 the Town and treat it for potable use.

40 To make the transported water potable, a WTP is needed for this project. Seven alternative WTP sites are  
41 considered in this EA—six on TNF public land and one on private land. Analysis of these sites would  
42 determine whether selection of the WTP location would require, under a separate authorization, purchase

1 of the site via the National Forest Townsite Act, if the proposed site is located on TNF public land.  
2 Alternatively, if analysis of the WTP sites determines that a private land location is the proposed location,  
3 a permit from the TNF for the WTP would not be required.

4 The project would comply with the management direction of the Forest Plan, which allows for the use of  
5 available NFS lands for appropriate public or private interests consistent with Forest Service policies  
6 (Forest Service 1985a). The policies for issuing a special use permit are outlined in the Forest Plan:  
7 authorizations for special uses may be issued to qualified applicants when the proposed use a) fulfills a  
8 demonstrated special need without unduly infringing on the use by the general public, b) is in accordance  
9 with an approved implementation plan (where called for) and would not cause adverse impacts on the  
10 National Forest and its resources that cannot be fully mitigated, c) does not serve a function that can be  
11 provided by private enterprise off NFS lands, and d) is complementary to Forest Service and Management  
12 Area objectives, programs, and purposes (Decision Units 39–44) (Forest Service 1985a).

## 13 REVISED PURPOSE AND NEED

14 During the initial scoping period (August 2009), the project purpose detailed the need to transport up to  
15 3,000 af (annually) to the Town. Numerous public scoping comments were received asking the Town to  
16 consider potential connection offshoots for communities along the pipeline route (e.g., Mesa del Caballo,  
17 Whispering Pines, Rim Trails, Wonder Valley, and Freedom Acres). Commenters asked that the proposed  
18 project be designed to deliver a total of 3,500 af annually, which would provide area communities with  
19 the opportunity to tap into the pipeline and use the remaining 500 af of water from the C.C. Cragin  
20 Reservoir at some point in the future. As a result of scoping comments, the project purpose and need were  
21 revised. As noted above, the AWSA made available a total of 3,500 af per calendar year (average) to  
22 communities in northern Gila County.

23 Following is the original project purpose and need, as presented to the public during the scoping period:

24       The purpose and need for the proposed action are based on the existing conditions in the Town  
25       of Payson and the desired future conditions that led to the proposed project.

26       **Existing Conditions:** As previously noted, the Town has access to up to 3,000 af per calendar  
27       year (average), of surface water from the C.C. Cragin Reservoir. There is currently no mechanism  
28       to deliver, or treat for potable use, C.C. Cragin surface water for the Town.

29       **Desired Future Conditions:** The desired future condition is to provide a means to transport and  
30       treat surface water to the Town, made available as a result of the AWSA.

31 This EA will also accompany a Feasibility Study being prepared on the proposed project for Reclamation,  
32 consistent with the requirements of Reclamation's Rural Water Supply Program. The Town recently  
33 received federal funding under the Rural Water Supply Act (August 2010) to prepare the Feasibility  
34 Study. If approved by Reclamation, the proposed project would become eligible for additional federal  
35 funding assistance for its construction.

## 36 PROPOSED ACTION

37 If authorized, the special use permit would allow for the location, construction, operation, and  
38 maintenance of an approximately 18-inch-diameter, 15-mile-long water pipeline on primarily Forest  
39 Service lands. The special use permit, if granted, would not transfer ownership; it would grant a right-  
40 of-way via a special use permit and the land used for the pipeline would remain under Forest ownership.  
41 The Town is surrounded by NFS lands, including the area between the Town and the terminus of the C.C.  
42 Cragin facilities; therefore, the proposed water pipeline route would be located on these public lands.

1 The water pipeline would generally be placed along existing FR 32B, FR 32, FR 64, FR 199, and West  
2 Houston Mesa Road.

3 A proposed WTP would also be required to treat C.C. Cragin Reservoir water for municipal potable use.  
4 As noted above, the project would also require the construction and operation of a WTP. If the proposed  
5 WTP selected is located on TNF public land, the Town would purchase the public lands, under separate  
6 authorization, via the National Forest Townsite Act.

7 The Proposed Action includes

- 8 • construction of the pipeline and WTP (18–24 months);
- 9 • permanent operation and maintenance of the pipeline;
- 10 • a permanent utility easement (designated utility corridor) for the pipeline;
- 11 • construction of WTP site components including electric, sewer, and hydroelectric power  
12 capabilities;
- 13 • permanent operation and maintenance of the WTP and associated facilities; and
- 14 • temporary construction staging areas.

15 The pipeline would be designed for a combined flow of 3.9 million to 4.5 million gallons per day (actual  
16 flow rates may vary, depending on demand).

17 The pipeline would originate in Washington Park, at the base of the Mogollon Rim at the C.C. Cragin  
18 Powerhouse. The pipeline would penetrate the existing tailrace conduit downstream of the power turbine  
19 at the power plant. The pipeline would then follow, to a large extent, existing FR 32B, FR 32, FR 64,  
20 FR 199, and West Houston Mesa Road. All sections of the pipeline (except any subsequent bridge  
21 crossings, to be determined during design) would be located underground, beneath the existing roadway  
22 or in the existing shoulder (except as determined to be infeasible or impossible per design). Related  
23 surface facilities may include (but would not be limited to) flow meter vaults, drain valves and drain  
24 lines, isolation valves, air relief valves, cathodic protection stations, and pressure-reducing stations.  
25 No pumping stations would be needed along the route, nor would electric power be required anywhere  
26 along the pipeline.

27 Additional infrastructure components include use of the Town's existing aquifer storage and recovery  
28 (ASR) wells, construction of a sewer line connection to existing infrastructure to transport wastewater  
29 to the Northern Gila County Sanitary District (NGCSD) wastewater treatment plant (WWTP), and  
30 connection of the treated waterline to the Town's existing infrastructure. Details of these components are  
31 included in Chapter 2.

32 The WTP facility would include one building, two aboveground (at-grade) storage tanks, a pump station,  
33 electric service equipment and power line, and a sewer line. The storage tanks include one 1- to 2-million-  
34 gallon finished water tank and one 2-million-gallon raw water permanent storage tank. If technically  
35 feasible, the WTP facility would also include a second building which would house a hydroelectric plant,  
36 to generate electricity that would be used to operate the WTP. Any wastewater discharge from plant  
37 operations would be discharged to the NGCSD WWTP, located in the town of Payson. Some small, solar-  
38 energy-powered installations along the pipeline may also be required for water pressure and water quality  
39 monitoring instruments, and for other purposes.

## 1 SCOPE OF ANALYSIS

2 The Forest Service has determined that an EA is needed to document the public involvement, issues, and  
3 impacts of the decision to authorize construction, operation, and maintenance of the proposed water  
4 pipeline on Forest Service lands. Three water pipeline action alternatives and six WTP alternative  
5 locations were selected for review in this EA and are detailed in Chapter 2. A seventh WTP alternative  
6 location was developed and evaluated after numerous public comments were received on the draft EA.  
7 The EA provides the necessary information to enable the Forest Service to reach an informed decision  
8 and determine whether the Proposed Action may have significant environmental effects.

9 The construction, operation, and maintenance of the remaining facilities associated with the proposed  
10 project, which are located off NFS lands (privately owned), also are described, and the potential impacts  
11 to those privately owned lands are evaluated. Evaluation of the entire proposed project in this EA will  
12 allow Reclamation to determine whether the proposed project may have significant environmental effects  
13 related to funding and the Rural Water Supply Program.

## 14 DECISION FRAMEWORK

15 Taking into account the purpose and need, the responsible Forest Service official will review the  
16 Proposed Action, additional project alternatives, environmental consequences, and comments from the  
17 public and other agencies to make an informed decision. The responsible Forest Service official may  
18 decide to select 1) the Proposed Action, 2) one of the other alternatives, 3) one of the alternatives after  
19 modifying the alternative with additional mitigation measures or a combination of actions from other  
20 alternatives, or 4) the No-Action Alternative.

## 21 RECLAMATION'S RURAL WATER SUPPLY PROGRAM

22 Reclamation is a Cooperating Agency in the preparation of this EA, pursuant to 40 Code of Federal  
23 Regulations (CFR) 1501.6 and 1508.5. Reclamation's Lower Colorado Regional Director will review the  
24 Feasibility Study, including this EA, prior to determining whether or not the Feasibility Study meets all  
25 the requirement of the Rural Water Supply Program and should be recommended to receive federal  
26 assistance for the proposed project's construction. This will include determining whether a Finding of  
27 No Significant Impact is appropriate, or whether an environmental impact statement must be prepared  
28 prior to completion of the Feasibility Study.

29 The Feasibility Study is a document separate from this EA, prepared by the Town in support of  
30 Reclamation's Rural Water Supply Program.

## 31 RESPONSIBLE OFFICIAL

32 The Forest Supervisor for the TNF is the responsible official who will decide which actions are to be  
33 implemented in compliance with federal policy, law, and regulation. The Forest Supervisor will document  
34 decisions and rationale in a Decision Notice/Finding of No Significant Impact. It will also be taken into  
35 consideration whether the proposed project is consistent with the Forest Plan when making the final  
36 decision.

## 1 PERMITS AND AGENCY APPROVAL REQUIRED

2 The following permits and/or authorizations would be required for project implementation:

- 3 • Consultation and concurrence from the Arizona State Historic Preservation Office (SHPO)  
4 regarding identification and evaluation of heritage resources to meet the requirements of Section  
5 106 of the National Historic Preservation Act (NHPA).
- 6 • U.S. Army Corps of Engineers Section 404 of the Clean Water Act (CWA) permit for discharge  
7 of dredged or fill material into waters of the U.S.
- 8 • Water Quality certification (Section 401 certification) is required from the Arizona Department  
9 of Environmental Quality (ADEQ) for all Section 404 permits.
- 10 • Section 402 of the CWA establishes the National Pollutant Discharge Elimination System  
11 (NPDES), a permitting system for the discharge of any pollutant into waters of the U.S. Since  
12 2002, the ADEQ has primacy over Section 402 through implementation of the Arizona Pollutant  
13 Discharge Elimination System (AZPDES). The AZPDES program regulates both point and  
14 nonpoint sources of discharge. The most common nonpoint source regulated is stormwater runoff  
15 from construction activities and industrial sites. Coverage under AZPDES may be obtained either  
16 through issuance of an Individual Permit, or under one of the five General Permits issued by  
17 ADEQ. As a part of the AZPDES permit, a Stormwater Pollution Prevention Plan (SWPPP) is  
18 required to be developed that identifies areas of stormwater discharge and the best management  
19 practices (BMPs) that will be used to prevent pollutants from entering the stormwater.
- 20 • The ADWR has authority to regulate groundwater use within Arizona. The storage of water  
21 through ASR wells will require obtaining a permit for an underground storage facility through  
22 ADWR. Water storage permits and recovery well permits may also be required; ADWR will  
23 determine the applicability of these permits, as the project is located outside any groundwater  
24 Active Management Area. In addition, the injection of water typically requires an Aquifer  
25 Protection Permit from the ADEQ, although exemptions may be applicable to the project.

## 26 PUBLIC INVOLVEMENT

27 The Council on Environmental Quality defines scoping as “an early and open process for determining the  
28 scope of issues to be addressed and for identifying significant issues related to a proposed action”  
29 (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation, help  
30 identify public issues, and obtain public comment at various stages of the environmental analysis process.  
31 Although scoping begins early, an interactive public involvement process continues until a decision is  
32 made. In addition to the following specific activities, the project has been listed on the Forest Service  
33 National Schedule of Proposed Actions since the July 2009 (07/01/09–09/30/2009) issue.

## 34 COLLABORATION WITH OTHER AGENCY OFFICIALS

35 Participation in development of the Proposed Action for the Town of Payson–Cragin Water Pipeline and  
36 Treatment Plant Project by federal, state, and local water agencies was pursued and encouraged by project  
37 and Payson Ranger District personnel. The TNF and the Town engaged federal, state, and local agencies  
38 to collaborate on development of the Proposed Action (see Chapter 2); see Chapter 5 for a list of the  
39 people and agencies that provided input. The draft Proposed Action was reviewed to address the needs  
40 and concerns prior to presenting the project to the public.

## 1 PUBLIC SCOPING AND SCOPING COMMENTS

2 On August 4, 2009, a project scoping letter providing information and seeking public comment was  
3 mailed to 44 individuals and groups. This included federal and state agencies, Native American tribes,  
4 municipal offices, businesses, and local fire departments, as well as local radio and television stations and  
5 the local newspaper, the *Payson Roundup*. A list of all entities receiving the scoping letter (federal and  
6 state agencies, Native American tribes, etc., is provided in Chapter 5). Hard copies of the letter were also  
7 left on the Mesa del Caballo, Freedom Acres, Beaver Valley, Wonder Valley, Whispering Pines, Rim  
8 Trail Estates, Washington Park, and Verde Glen Public Notice Boards.

9 One public scoping meeting was held for the proposed Town of Payson–Cragin Water Treatment Plant  
10 and Pipeline Corridor Project. The meeting was held at the Julia Randall Elementary School gymnasium  
11 (902 West Main Street, Payson, Arizona) on August 26, 2009—see “Public and Community Meetings”  
12 section below for additional details. In total, 40 comments were received in response to this mailing.  
13 Comments received focused on three main categories: 1) project alternatives, 2) general comments, and 3)  
14 recommended mitigation measures. Individual comment forms can be found in the 2009 scoping report  
15 (SWCA Environmental Consultants [SWCA] 2009).

### 16 Project Alternatives

17 Several commenters indicated that the Town should consider potential connection offshoots for  
18 communities along the pipeline route, such as Mesa del Caballo, Whispering Pines, Wonder Valley, and  
19 Freedom Acres, which should be able to tap into the pipeline and into the water supply. Respondents  
20 indicated that water for these communities would be important for drinking water, as well as for fire  
21 suppression, irrigation, and livestock and animal care.

22 One commenter suggested an alternate route, or additional offshoot, for the pipeline between Washington  
23 Park and Water Wheel Hill.

24 Two commenters requested that fire hydrants be added along the pipeline route to provide an additional  
25 water supply for fire suppression.

26 One commenter wanted the construction staging areas to be identified as part of the action alternative  
27 descriptions.

### 28 General Comments

#### 29 *Project Support*

30 In general, most of the scoping comments received were very supportive of the Proposed Action (at the  
31 time of scoping, the proposed action was pipeline Alternative 1 and WTP1), both in terms of the overall  
32 project goal and with respect to the location of the pipeline and proposed WTP1.

#### 33 *Water Resources*

34 Respondents indicated support for the project because they anticipated that having an alternate water  
35 supply would result in a positive impact to the Town aquifer as a result of reduced groundwater pumping,  
36 as well as improved water pressure and reliability of water availability.

1 Commenters asked that the potential impacts to the East Verde River (an impaired water<sup>3</sup>) be considered  
2 in terms of impacts to downstream habitat from removing water flow from the river, and in terms of the  
3 potential release of pollutants from the WTP.

4 The ADEQ Water Quality Division sent information regarding potential water quality impacts and  
5 required permits to comply with applicable water quality certifications, such as a CWA Section 401  
6 Water Quality Certification, AZPDES permits for construction (regarding stormwater), a De Minimis  
7 General Permit, an Aquifer Protection Permit, and approval to construct a new water conveyance system.

## 8 ***Socioeconomic Impacts***

9 A commenter asked that potential impacts to businesses during construction along the project route be  
10 considered in the analysis. The commenter also asked that impacts to existing utilities (to businesses and  
11 residences) be considered carefully. The commenter also questioned whether there would be a need to  
12 acquire additional private lands along the project route, and if so, requested that landowners be fairly  
13 compensated.

## 14 ***Air Quality***

15 The ADEQ Air Quality Division sent information regarding potential air quality impacts and suggested  
16 BMPs to comply with applicable air pollution control requirements and minimize potentially adverse  
17 impacts to public health and welfare.

## 18 **Recommended Mitigation Measures**

19 A commenter suggested that if any blasting during construction is planned that it be conducted at night to  
20 minimize noise disturbances. Respondents also suggested that if security lighting at the water treatment  
21 plant is needed that it be dark sky compliant. And finally, one respondent indicated that if cultural  
22 resources were encountered along the pipeline route, any needed mitigation would need to be outlined in  
23 the EA.

## 24 **PUBLIC AND COMMUNITY MEETINGS**

25 On August 26, 2009, an “Open House” was held in the gymnasium of Julia Randall Elementary School  
26 at 902 West Main Street in Payson. The meeting was held to provide information to the public on the  
27 Proposed Action (at the time of scoping, the proposed action was pipeline Alternative 1 and WTP1), give  
28 the public an opportunity to voice its issues and concerns, and have questions answered regarding the  
29 project. Project personnel from the Payson Ranger District and the Town hosted the meeting. In total,  
30 23 members of the public attended the meeting. Project comments from the public, including any issues  
31 and concerns, were all provided in written format (and are described above in Public Notification and  
32 Scoping Comments).

## 33 **30-DAY COMMENT PERIOD ON THE ENVIRONMENTAL** 34 **ASSESSMENT**

35 Regulations for appeal, as detailed in 36 CFR 215, require a 30-day notice and comment period for EAs  
36 before a decision can be made. All comments must be considered prior to the final decision, and copies of

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<sup>3</sup> The East Verde River is listed as a state 303(d) impaired water body, stretching for approximately 20 miles from Ellison Creek to American Gulch, for selenium concentrations that have equaled or exceeded drinking water standards (ADEQ 2006).

1 the comments received and responses must be kept in the Project Record. The decision for the project is  
2 subject to appeal if non-supportive comments for the project are received during the 30-day comment  
3 period. If only supportive comments are received, a decision may be made where an opportunity to appeal  
4 would not be considered. This is in accordance with 36 CFR 215.12(e)(1). The public was provided the  
5 opportunity to comment on the draft EA from February 4–March 4, 2011.

## 6 **Public Notification and Draft EA Comments**

7 On February 4, 2011, a notice of availability was mailed to 480 recipients. Legal notices were also  
8 published in the Arizona Capital Times and in the Payson Roundup on February 4, 2011. The project  
9 notices advised the public that the draft EA was available for review, and requested public input and  
10 comment on the document. The recipient list included federal, state, and county agencies, Native  
11 American tribes, municipal offices, businesses, and local fire departments. In total, 214 comments were  
12 received in response to the project notice; many of these were duplicates sent to the Payson Ranger  
13 District, the Tonto National Forest Supervisor's office and/or email, therefore the total number of unique  
14 comments was 178. The primary project concerns are discussed below; a summary and response to all  
15 comments is provided in Appendix E.

### 16 ***WTP2 Comments***

17 Of the 178 comments, 158 commenters expressed opposition to the location of WTP2 adjacent to the  
18 Mesa del Caballo subdivision. The primary reasons for opposition include concerns about impact to  
19 (decreases in) property value, limiting access to Forest Service lands, and changes in quality of life.  
20 Commenters opposing WTP2 were also concerned that WTP2 was not presented during scoping in 2009  
21 (see NEPA discussion below).

### 22 ***WTP1 Comments***

23 In addition to opposition to WTP2, six commenters opposed the location of WTP1, while 46 commenters  
24 preferred the location of WTP1.

### 25 ***Alternative Pipeline 2 Comments***

26 Several residents near the north end of the proposed Alternative 2 pipeline expressed concern about  
27 impacts to the Rim Trail community and associated existing infrastructure. Resource concerns expressed  
28 include land use, recreation, water quality and quantity, noise, air quality, vegetation, private property  
29 rights, and socioeconomics. In terms of the proposed pipeline alignment and area infrastructure, residents  
30 expressed concern about the pipeline alternative 2 alignment through Rim Trail Estates and impacts to  
31 aging potable water lines.

### 32 ***New and Modified Alternatives***

33 As a result of Mesa del Caballo concerns over WTP2, one commenter proposed a new WTP alternative  
34 site, to be located on the east side of West Houston Mesa Road, southeast of the Mesa del Caballo  
35 subdivision; this WTP is called WTP7 and is analyzed in detail in this EA (see Figure 2.5). WTP7 was  
36 proposed to alleviate concerns about impacts from WTP2 to property value, limiting access to Forest  
37 Service lands, and changes in quality of life at Mesa del Caballo. Additionally, WTP7 is now the  
38 proposed action for the project.

39 Additionally, the north end of pipeline alternative 2 has been realigned to avoid Box Elder Lane and  
40 minimally cross through the Rim Trail community. See discussion below on additional public outreach.  
41 Also, see Chapter 2 for the Pipeline Alternative 2 description.

## 1 ADDITIONAL PUBLIC OUTREACH

2 In addition to the Forest Service making the draft EA available for the public to review, the Town of  
3 Payson hosted and/or conducted several other meetings with members of the public to discuss their  
4 concerns about the project.

5 Residents of Mesa del Caballo attended the Town of Payson March 1, 2011 Capital Improvement Plan  
6 special meeting and the March 3, 2011 Town Council meeting, where Mayor Kenny Evans and staff from  
7 the Payson Water Department answered project questions and allowed members of the public to express  
8 concerns about the project, specifically location of WTP2 adjacent to Mesa del Caballo.

9 The Town hosted a meeting on March 4, 2011 at the WTP2 site; Mayor Kenny Evans and Buzz Walker  
10 from the Town of Payson attended, as well as Larry Hettinger from the Payson Ranger District. A group  
11 of 15 to 20 interested home owners from Mesa Del Caballo were invited to meet at the proposed WTP2  
12 site north of their subdivision. Mesa del Caballo residents were concerned about the location of WTP2  
13 and potential impacts to property value, access to Forest Service lands, and impacts to quality of life and  
14 expressed these concerns to Town representatives.

15 On April 2, 2011, the Town of Payson Water Department and Sunrise Engineering met with residents of  
16 the Rim Trail Estates subdivision to discuss potential infrastructure conflicts (as noted in public comment  
17 on the draft EA) and to identify alternative routes for Pipeline Alternative 2. The Town and Sunrise  
18 discussed a possible reroute of the Pipeline Alternative 2 alignment north of, and off of, Box Elder Lane.  
19 As noted above, the north end of Pipeline Alternative 2 has been realigned to avoid Box Elder Lane and  
20 minimally cross through the Rim Trail community.

## 21 ISSUES AND INDICATORS

22 A list of resource concerns and issues were identified based on internal scoping with the Forest Service  
23 Interdisciplinary Team (ID Team) resource specialists. Specific impact topics were developed to allow for  
24 comparison of the environmental consequences of each alternative. Impact topics were then subjected to  
25 detailed analysis based on substantive issues and environmental statutes and regulations. A summary of  
26 the impact topics, analysis indicators, and rationale for selection or dismissal are given below. Generally,  
27 impact topics are included if they have the potential for direct, indirect, or cumulative impacts.

### 28 Issues Analyzed in this Document

29 Following are the key issues that are pertinent to the action alternatives. Resource condition indicators are  
30 also described for each resource issue. These indicators guided the analysis in Chapter 3. Impacts will be  
31 considered in terms of type, context, duration, and intensity.

32 **Effects on Access and Travel Management.** The action alternatives include travel and lane  
33 restrictions on a road. Changes in the quality and character of access to the area may affect recreational  
34 users as well as the residents of affected communities.

35 **Indicator:** Change in area access for residents, businesses, and recreationists and the duration of  
36 limited access (qualitative).

37 **Indicator:** Change in road maintenance level (qualitative).

38 **Effects on Air Quality.** The action alternatives have the potential to alter air quality in the project area  
39 over the short term as a result of construction.

1       **Indicator:** Presence or absence of U.S. Environmental Protection Agency (EPA) maintenance or  
2 non-attainment area. List pollutants of concern if in a non-attainment or maintenance area.

3       **Indicator:** Change in fugitive dust emissions (qualitative). Describe activities and impacts that may  
4 result.

5       **Effects on Climate Change.** The Forest Service includes management prescriptions for climate  
6 change in planning-level documents. The project is unlikely to impact climate change or be affected by  
7 climate change; however, it is addressed in this EA.

8       **Indicator:** Qualitative evaluation of the potential impact on climate change, or impact on the project  
9 from climate change. Will include a general discussion of the role of the forest in ecosystem health  
10 and the relationship to climate change (in accordance with Forest Service *Climate Change*  
11 *Considerations in Project Level NEPA Analysis Guidance* [Forest Service 2009a]).

12       **Effects on Fuels/Fire and Public Safety.** The Houston Mesa Road alignment, in its current  
13 condition, acts as a firebreak and access route for wildland fire management. During construction,  
14 mitigation measures would also have to be implemented to ensure that no proposed traffic restrictions  
15 would occur for emergency vehicles responding to area communities.

16       **Indicator:** Change in risk of fire and fuels (qualitative).

17       **Indicator:** Change in emergency and fire vehicle access and ability to respond to emergencies or fires  
18 (qualitative).

19       **Effects on Geology and Soils.** Alteration of geological processes and features is not proposed in any  
20 of the alternatives. However, project construction could impact slope stability and safety and affect soil  
21 erosion.

22       **Indicator:** Using Terrestrial Ecosystem (TES) map units, detail level of erosion hazard and acreage  
23 of impact by TES unit.

24       **Effects on Heritage Resources.** The NHPA, Archaeological Resources Protection Act, and the  
25 Native American Graves Protection and Repatriation Act of 1990 require consideration of impacts to  
26 cultural resources. Arizona Revised Statutes (ARS) 41-865 also protects the disposition of human remains  
27 on lands within the state of Arizona. Implementing any of the action alternatives has the potential to affect  
28 heritage (archaeological) resources located near the proposed water pipeline alignments and WTP  
29 locations.

30       **Indicator:** Presence or absence of heritage resources.

31       **Indicator:** Direct loss of heritage resources, if disturbed.

32       **Indicator:** Indirect change in the visual setting and landscape of heritage resources (qualitative).

33       **Effects on Land Use.** Construction of the project would result in a change in land use and surface  
34 disturbance.

35       **Indicator:** Change in land ownership and land use. Quantify by describing acreage of surface  
36 changes.

37       **Effects on Minerals and Energy.** As above, construction of the project would result in a change in  
38 land use and surface disturbance. Therefore, it has the potential to impact minerals and energy.

39       **Indicator:** Determine presence or absence of mineral rights. Impact may result from loss of mining  
40 opportunities, if present.

1 **Effects on Active Livestock Grazing.** Impacts to active livestock on grazing allotments within or  
2 adjacent to the project area could occur because there is one active grazing allotment in the project area.

3 **Indicator:** Presence or absence of livestock grazing allotments.

4 **Indicator:** Acreage of surface disturbance; direct loss of grazing area (percent of total allotment).

5 **Effects on Noise.** Pipeline construction and WTP operation have the potential to alter noise levels in  
6 the project area over both the short and long term.

7 **Indicator:** Presence or absence of sensitive noise receptors (i.e., residences, businesses, churches,  
8 etc.) within 1,000 feet of the project.

9 **Effects on Recreation.** Houston Mesa Road provides access to developed picnic and dispersed  
10 camping areas along the East Verde River in the TNF, the Shoofly Interpretive Site, and several trails;  
11 therefore, short-term changes in the character of Houston Mesa Road caused by pipeline construction and  
12 in the nature of access to the area could affect recreationists and recreational opportunities in the area.

13 **Indicator:** Changes in the recreation experiences, opportunities, and settings and their compatibility  
14 with the existing Recreation Opportunity Spectrum (ROS) designations (qualitative).

15 **Effects on Visual Quality.** The proposed project has the potential to alter the appearance of the  
16 landscape in the project area in the short term during construction and in the long term once the WTP is  
17 completed.

18 **Indicator:** Project meets established Visual Quality Objectives (VQOs). Determine acreage and  
19 duration of impact for each VQO.

20 **Effects on Water Quality.** Construction associated with the action alternatives has the potential to  
21 affect local runoff and therefore water quality.

22 **Indicator:** Change in maximum daily load of pollutants in the East Verde River. List change and  
23 pollutants.

24 **Indicator:** Change in aquifer water quality in the vicinity of ASR wells.

25 **Effects on Water Quantity.** The proposed project would annually divert up to 3,500 af of water to the  
26 Town (and northern Gila County communities) of the 9,500 af (on average) of water released by SRP into  
27 the East Verde River. The annual reduction in releases into the East Verde as a result of the project could  
28 potentially impact downstream water rights holders.

29 **Indicator:** Change in East Verde River stream flow; if changes, determine whether change would  
30 result in an impact to downstream water rights holders (including the Forest Service's water right).

31 **Indicator:** Qualitative discussion of potential impacts on groundwater wells near ASR wells, from  
32 project use of ASR wells for storage.

33 **Indicator:** Quantify estimated WTP discharge and current capacity of NGCSD WWTP to handle  
34 project discharge.

35 **Effects on Wildlife, Threatened or Endangered, and Other Special-status Wildlife Species.**  
36 Information obtained from the U.S. Fish and Wildlife Service (USFWS), the Arizona Game and Fish  
37 Department (AGFD) Heritage Data Management System (HDMS), Forest Service management  
38 guidelines, and site visits were used to develop a list of species of concern that are evaluated for the  
39 project area; 20 species are listed under the Endangered Species Act (ESA) for Gila County by the  
40 USFWS. This EA considers all 20 species; however, only five species were analyzed in detail.

1 The 15 species not analyzed in detail were eliminated from further consideration because the project area  
2 is either clearly beyond the known geographic or elevational range of these species, or it does not contain  
3 vegetation or landscape features known to support these species, or both. Effects on wildlife, threatened  
4 or endangered, or other special-status species could occur as a result of the surface disturbance required  
5 for the project.

6 **Indicator:** Presence or absence of species of concern and/or their habitat in the project area. Evaluate  
7 potential impacts to species of concern and/or their habitat (acres of impact) if present within the  
8 project area.

9 **Indicator:** Short-term impacts to species of concern in the project area as a result of noise and  
10 displacement during construction.

### 11 **Effects on Vegetation, Threatened or Endangered, and Other Special-status Plant**

12 **Species.** As above (for wildlife), effects on vegetation and threatened or endangered plant species could  
13 occur as a result of the surface disturbance required for the project.

14 **Indicator:** Characterize vegetation community in the project area, and determine short-term and  
15 long-term impacts to composition, structure, and quantity (acres of impact).

16 **Indicator:** Presence or absence of plant species of concern in the action area. Evaluate short-term and  
17 long-term impacts to the specific plant species (individual plants and/or acres of impact).

18 **Effects on Noxious Weeds.** Proposed Executive Order (EO) 13112 mandates all federal agencies to  
19 examine the impacts of their activities on the status of invasive species. Proposed ground disturbance  
20 along Houston Mesa Road could create conditions favorable to exotic vegetation and noxious weeds.  
21 In addition, construction equipment could spread existing populations of exotic vegetation and noxious  
22 weeds.

23 **Indicator:** Acreage of ground disturbance. Characterize increased risk for noxious weeds  
24 (qualitative).

25 **Effects on Socioeconomics.** The project would be located along existing roads used to access area  
26 communities and businesses, as well as area recreation opportunities. Construction of the pipeline and  
27 WTP could result in impacts to access and area quality of life. Construction could also increase area  
28 employment. The pipeline and WTP, if constructed, would also improve the Town's water supply,  
29 thereby improving the Town's quality of life.

30 **Indicator:** Increase in employment for pipeline and WTP construction. Compare with existing levels  
31 of employment (determine percent change).

32 **Indicator:** Changes in quality of life due to construction and/or operation of the pipeline or one of the  
33 WTP sites.

34 **Indicator:** Changes in property value due to construction and/or operation of the pipeline or one of  
35 the WTP sites.

36 **Indicator:** Determine whether residents and businesses would be impacted during construction of the  
37 project and characterize potential impacts (qualitative).

38 **Effects on Environmental Justice.** EO 12898 requires federal agencies to identify and address  
39 disproportionately high and adverse human health or environmental effects on minority and low-income  
40 populations.

41 **Indicator:** Determine the presence or absence of environmental justice communities, using the EPA's  
42 Office of Environmental Justice definition for an environmental justice community.

1       **Indicator:** Identify and describe potentially disproportionately high and adverse human health or  
2       environmental effects (qualitative).

## 3       **ISSUES CONSIDERED BUT ELIMINATED FROM FURTHER** 4       **ANALYSIS**

5       **Effects on Wilderness.** There are no designated Wilderness Areas adjacent to the project area.

6       **Wild and Scenic Rivers.** The East Verde River is not a designated Wild and Scenic River; however,  
7       portions of it have been determined eligible for designation (Forest Service 1993). No segments of the  
8       East Verde River adjacent to the project area have been determined eligible for designation as a Wild and  
9       Scenic River. The closest eligible segment is located approximately 2 to 3 miles west of the project area,  
10      near East Verde Park (Forest Service 1993; Figure 1.2). This eligible reach is managed for its recreational  
11      and scenic qualities.

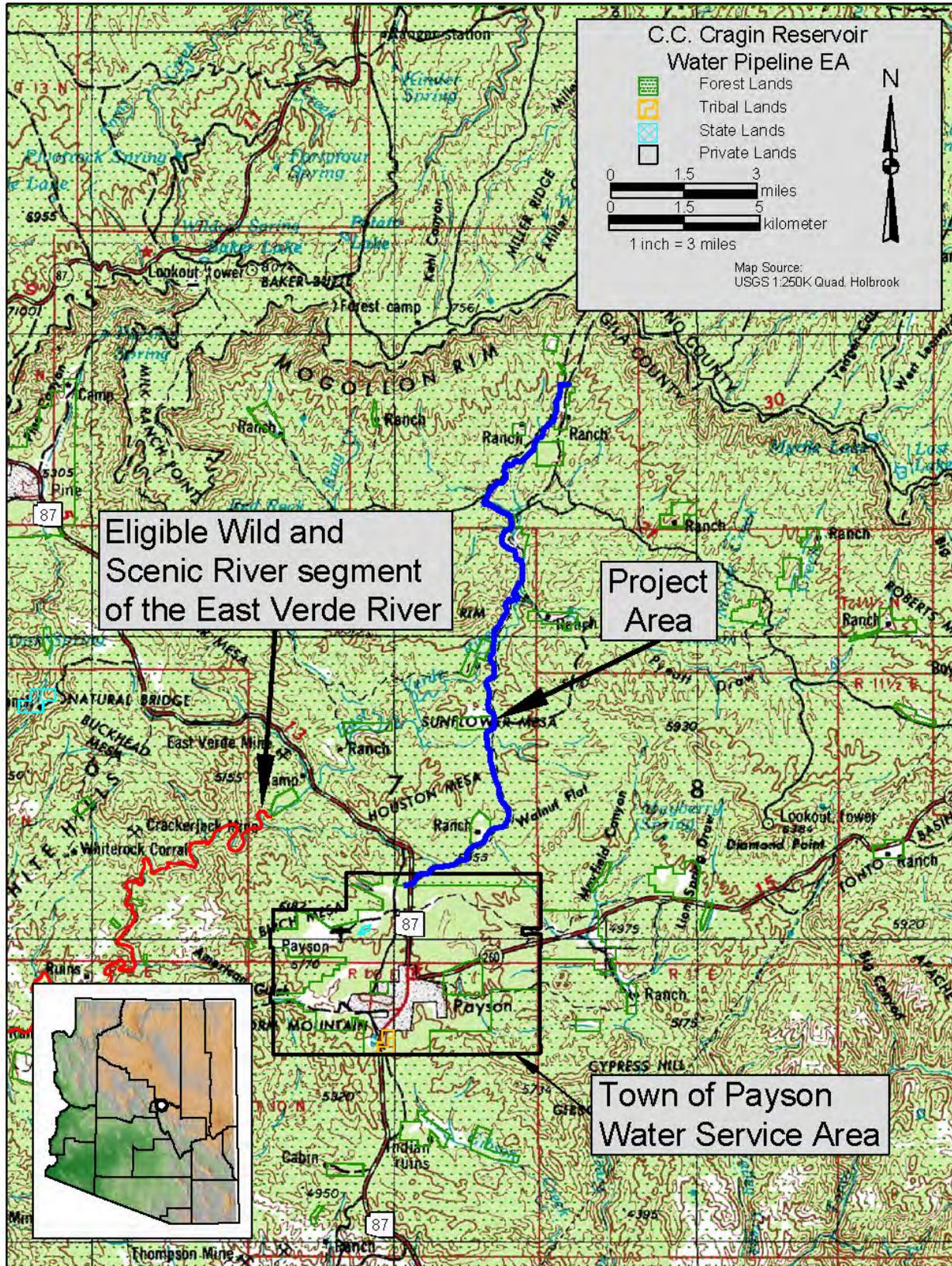
12      Federal regulations pursuant to the Wild and Scenic River Act (36 CFR 297) define the Proposed Action  
13      as a “water resources project,” and the need to evaluate the effects of the Proposed Action with respect to  
14      the East Verde River is outlined in Forest Service Manual 2354. Forest Service guidance states that “if the  
15      activity does not evidence a compelling need or is inconsistent with the management goals and objective  
16      or other applicable laws, the project need not be considered further” (Forest Service 2009b). Under the  
17      Proposed Action, on average, the portion of the East Verde River to be impacted by the Proposed Action  
18      might see a 10% to 15% reduction in flow. The Proposed Action would not change the large variability in  
19      flow that has occurred historically and would continue to occur in the future as a result of the imported  
20      Cragin flows. These effects do not represent a compelling need, and the minor reduction in flow under  
21      the Proposed Action would still be consistent with the management goals and objectives for the East  
22      Verde River.

## 23      **PROJECT RECORD AVAILABILITY**

24      Additional documentation, including detailed analysis of project area resources, may be found in the  
25      Project Record, located at the Payson Ranger Station in Payson, Arizona. These records are available for  
26      public review pursuant to the Freedom of Information Act (5 United States Code [USC] 552).

27      For additional information, contact:

28  
29      Genevieve Johnson  
30      Forest Planner  
31      Tonto National Forest, Forest Supervisor’s Office  
32      2324 E. McDowell Road  
33      Phoenix, Arizona 85006  
34      Office: (602) 225-5200  
35      email: [grjohnson@fs.fed.us](mailto:grjohnson@fs.fed.us)



1  
2 **Figure 1.2** Eligible Wild and Scenic River segment of the East Verde River.

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## 1 Chapter 2

## 2 **ALTERNATIVES**

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### 3 **INTRODUCTION**

4 This chapter describes and compares alternatives considered by the Forest Service for the Town of  
5 Payson–Cragin Water Pipeline and Treatment Plant Project. It includes a discussion of how alternatives  
6 were developed, an overview of mitigation measures and other features common to all alternatives,  
7 a description of each alternative considered in detail, including specific mitigation measures, and a  
8 comparison of these alternatives, focusing on significant issues, if any. Chapter 2 is intended to present  
9 alternatives in comparative form, sharply defining issues and providing a clear basis for choosing among  
10 options for the responsible official and the public (40 CFR 1502.14).

11 This chapter analyzes the action alternatives, as well as the required No-Action Alternative. Analysis of  
12 the No-Action Alternative is required under NEPA (40 CFR 1502.14[d]) and provides a baseline for  
13 assessing the potential impacts of the Proposed Action. The alternatives presented and evaluated in this  
14 EA represent ways in which to reasonably respond to the public issues and concerns raised during the  
15 scoping process (see Public Notification and Scoping Comments in Chapter 1). The alternatives  
16 considered establish a strategy to address the purpose and need statement provided in Chapter 1.

17 Alternatives in this chapter are presented by 1) water pipeline options and 2) WTP location options.  
18 The alternatives for the pipeline and the alternatives for the WTP can be put together in any combination  
19 and include components of the project located on private and Forest Service lands. The remainder of the  
20 proposed project, not located on NFS lands, is described separately. The special use permit, if granted,  
21 would not transfer ownership; it would grant a right-of-way via a special use permit and the land used for  
22 the pipeline would remain under Forest Service ownership.

### 23 **ALTERNATIVE DEVELOPMENT PROCESS**

24 An array of alternatives was developed in response to public scoping concerns, agency scoping concerns,  
25 engineering feasibility, and the potential for resource impacts. For this project, the alternatives feature  
26 realignments of the pipeline and different locations for the WTP.

27 The description of the proposal and alternative(s) may include a brief description of modifications and  
28 incremental design features that evolved through the analysis process to develop the range of alternatives  
29 considered (36 CFR 220.7[b][2][iii]).

### 30 **WATER PIPELINE ALTERNATIVES CONSIDERED IN DETAIL**

31 Following is a description of the water pipeline No-Action and action alternatives. The alignment  
32 alternatives were developed through internal interdisciplinary team scoping and alternative development  
33 efforts, as well as public scoping. The major components of each alignment, pipeline size, etc., are the  
34 same and are described below under Features Common to All Pipeline Alternatives. The major  
35 differences in each alternative are alignment route and pipeline length, and are described under each  
36 alternative below.

## 1 **No-Action Alternative**

2 Under the No-Action Alternative, the proposed water pipeline and WTP would not be constructed and the  
3 Forest Service would not issue a special-use permit to the Town. The Town would still hold a perfected  
4 water right of 3,000 af at C.C. Cragin Reservoir and would work with SRP to determine other methods to  
5 deliver and use the water.

## 6 **Water Pipeline Features Common to All Action Alternatives**

### 7 **Construction**

8 A total of 200 feet for a construction right-of-way (ROW) may be needed for construction of the pipeline  
9 across NFS lands. The 200-foot ROW is the maximum width needed for construction to allow for rough  
10 excavating conditions, blasting, and materials processing needs. In some cases, a width less than 200 feet  
11 will be designated, such as in the northern portion of the project area where designated Mexican spotted  
12 owl (MSO) critical habitat exists (see Chapter 3, Wildlife). As such, unless explicitly stated otherwise, for  
13 the purposes of this analysis, a 200-foot ROW is considered. The permanent utility easement for  
14 maintenance of the pipeline would likely be less than one-half (100 feet) of the 200-foot ROW width. The  
15 permanent maintenance easement in areas along the proposed pipeline that occur on privately owned  
16 lande.g. near the Whispering Pines and Rim Trail Estates areas) would be 10 feet.

17 The pipeline would be buried at a minimum depth of 5 feet (to the top of the pipe) and a maximum of  
18 15 feet, depending on soil and topographic conditions. Erosion, including runoff, of excavated material  
19 would be managed under a SWPPP and an NPDES permit. Material remaining after excavation of the  
20 pipeline trench would be reused as pipe bedding or trench backfill once the pipe is installed. Any excess  
21 material would be used to resurface disturbed areas of unpaved roads (see Reclamation, below), fill in  
22 previously excavated areas unrelated to this project, etc. These methods would be determined by working  
23 with the Forest Service engineer and ID Team and identified in the project construction drawings.

24 Blasting would be required in some areas because of the amount of and type of subsurface rock estimated  
25 during geotechnical investigations. These areas could include, but are not limited to, Third Crossing and  
26 areas west of the Whispering Pines development. Blasting needs would be determined during construction  
27 as excavation occurs. Blasting activities would be restricted to predetermined daytime hours, with proper  
28 notification to local residents.

29 Wash crossings at First, Second, and Third crossings (as applicable to a given alternative) are solid rock  
30 directly below the wash surface. Construction for the new waterline would be completed using a “Divert  
31 and Trench” open-cut method within the river bottom. The first phase would be to construct the  
32 temporary diversion berms and stream flow bypass. This would be largely a hand operation assisted by a  
33 loader or backhoe from the shore. The main flow path of the stream would be routed around the portion of  
34 the stream to be crossed by diverting the stream flow into one side of the river. Adjacent to the crossing,  
35 the stream would be sandbagged (the construction contractor would be mandated to obtain the sand for  
36 the sand bags from a environmentally cleared, commercially available source) both upstream and  
37 downstream, forming dams across this area of the stream, thus directing the stream flow into the stream  
38 flow bypass. The water flow would be maintained through the bypass during construction. Water  
39 contained within the dams would be pumped onto the ground to a de-silting basin away from the stream  
40 to allow it to percolate into the ground. Once the stream is diverted into half of the river section, any  
41 water that is remaining in the trenching area behind the temporary dam would be pumped out. This water  
42 would be examined to determine if there are any fish present. If fish are present they would be trapped  
43 and released back into the river. If no fish are present (or after the fish are trapped and released) the area  
44 would be pumped to de-silting basin outside the river bank and allowed to percolate back into the soil.

1 The next phase of the crossing construction would be digging the trench. This would normally be done  
2 with a trackhoe working from each side of the stream. The existing concrete low water crossings in the  
3 river would be used to transport equipment from one side to the other. The work area through the stream  
4 would be approximately 30 feet wide. Before trench excavation begins, vegetation and topsoil in the  
5 riparian zone would be removed and stockpiled for later use. The topsoil from the river banks would be  
6 removed and stockpiled from over the trench and in the work area for the trench. The purpose for this is  
7 to restore the river banks to their original contour after construction with the native topsoil that exists.  
8 If necessary, the banks would be stabilized with jute matting or stone riprap to prevent erosion. Once the  
9 trench has been excavated, the new pipe would be installed. Concrete coated pipe (and optional casing)  
10 would be installed under the stream course and extended a nominal 10 feet each side of the ordinary high  
11 water mark to prevent the pipe from floating up through the surface after water is returned to the  
12 streambed, and to provide an extra measure of protection for the pipe in case of unexpected flood scour.

13 Once pipe/casing has been installed within the first area, the next step would involve removing the  
14 temporary diversion structure from one side of the river bed and relocating it to the other side of the river  
15 bed, so flows can be diverted over to the side where construction has been completed. Once the pipe  
16 installation is complete, the sand bags would be removed from the river bed and native material would be  
17 used to restore it to its original condition. A typical detail for this method of construction is shown in the  
18 Typical East Verde River Crossing Detail in Appendix B.

19 All construction would be performed during low flow periods of the year to lessen the amount of flows  
20 being diverted during construction. The time range when the flows in the East Verde River are the lowest  
21 are late summer, fall, and winter; however, this also depends on local precipitation events. The lowest  
22 flows occur when SRP is not pumping the C.C. Cragin water into the East Verde River. Since the  
23 river beds are of adequate size to handle much higher flows than would be occurring at the time of  
24 construction, the diverted water would remain within the existing banks. Therefore, the existing river bed  
25 would not be widened to handle these flows. Any pumping would not occur directly out of the East Verde  
26 River. There are only two times a pump is anticipated to be required. The first is for groundwater that  
27 may enter the trench during construction and therefore should be fish-free. The second is during the  
28 initial set-up of the temporary diversion dam. The equipment used for this construction would be  
29 Backhoe/trackhoe with bucket, backhoe/trackhoe with hammer attachment, rubber-tired loader, dump  
30 truck, and a cement truck. The contractor would use BMPs to prevent any construction debris from  
31 entering the river during this construction. Each crossing of the East Verde River is anticipated to last  
32 seven to ten days due to the rock nature of the stream bottom.

33 Existing culverts would be maintained or replaced, as necessary, to install the pipeline. Damage and/or  
34 removal of trees would be avoided as much as possible; however, tree removal, minor tree branch  
35 trimming, or incidental crushing of small shrubs may occur.

36 Additionally, a connecting pipeline from the WTP to the NGCSD WWTP would need to be constructed  
37 on private land. The length of the connection depends on the WTP alternative under consideration.  
38 Details on the WTP to NGCSD WWTP connection are provided in each WTP alternative discussion.

39 Project construction would likely require the restriction of travel to one lane during work hours for  
40 roadway segments under or near areas of active construction. Under all action alternatives, one-way travel  
41 would be maintained and, where feasible, so would two-way travel at reduced speeds, depending on the  
42 location. In many sections of the proposed alignment, construction activities and trenching would occur  
43 off the road bed in the shoulder, enabling two-way traffic. During daylight hours and peak travel times,  
44 no complete road closures or major traffic delays are anticipated. Although unanticipated, any full  
45 roadway closures would occur during predetermined nighttime hours, typically 7:00 p.m. to 7:00 a.m.,  
46 and with proper notification to local residents. Under no circumstances would local vehicular use be

1 directed or allowed to depart from the existing travelways such that the surrounding vegetation or natural  
2 features are impacted. Traffic control activities, personnel, and measures would be provided in  
3 accordance with the Federal Highway Administration's (FHWA's) latest *Manual on Uniform Traffic*  
4 *Control Devices for Streets and Highways* (FHWA 2009).

5 Seven 1-acre temporary workspace or staging areas would also be required. These staging areas are  
6 required for storing equipment and construction supplies. At the beginning of each work day during  
7 construction, staging areas serve as the location to lay out and deploy the equipment needed for that day.  
8 These areas are fenced, and the gate would be locked during non-operational hours. Existing conditions  
9 at the staging areas would be maintained wherever feasible, including considerations for livestock and  
10 wildlife that may use gravel pits with standing water as a water source. The staging areas would only be  
11 required during construction and would be returned to their existing conditions once the pipeline becomes  
12 operational and the staging areas are no longer needed (Figures 2.1–2.3).

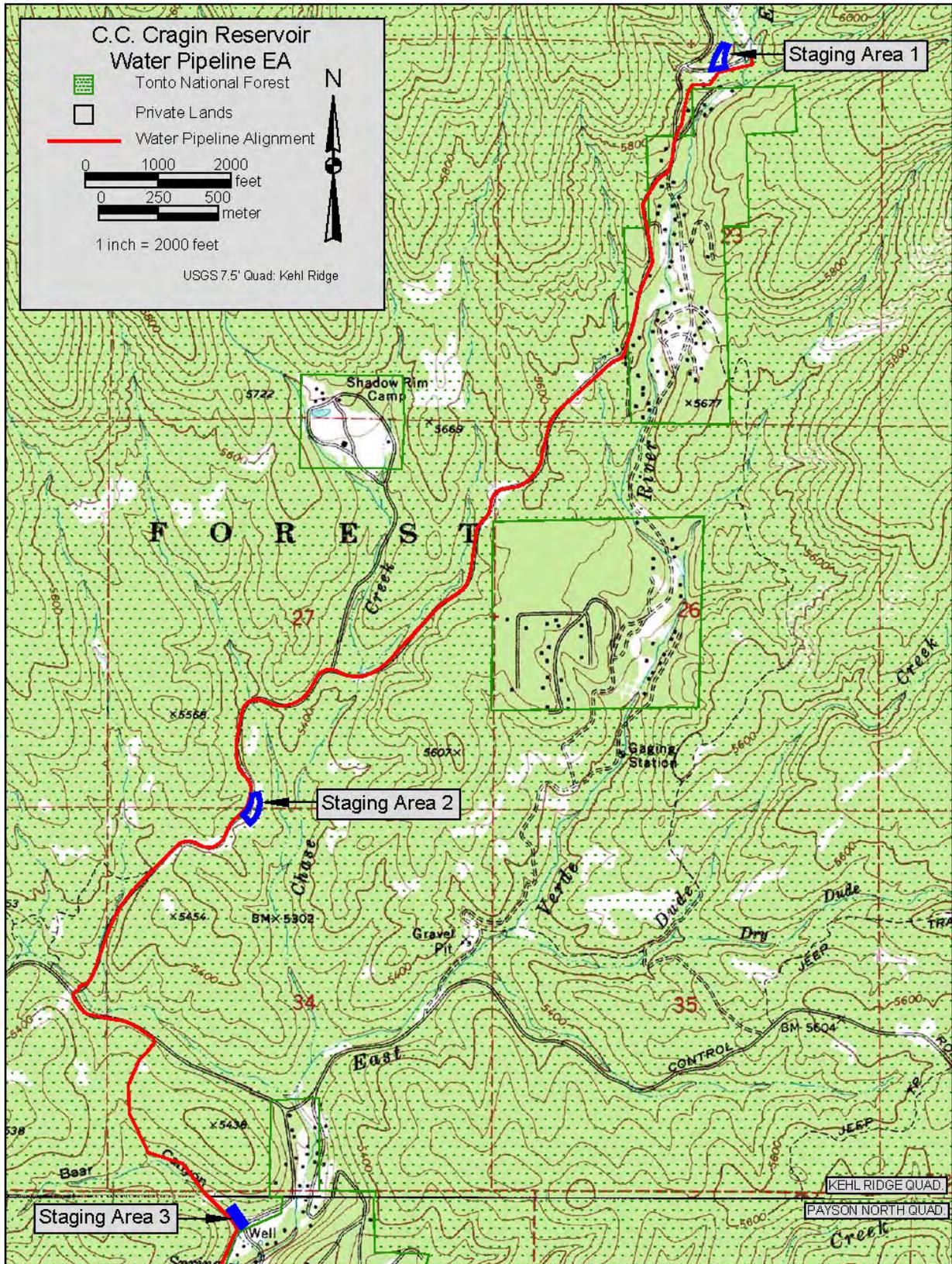
13 The proposed staging areas include the following:

- 14 1. Clearing on north side of access road to tailrace, near power lines, and east of trailhead turnoff
- 15 2. Clearing on east side of FR 32, 0.7 mile north of Control Road
- 16 3. Dirt parking area on the west side of Houston Mesa Road, just north of the pipeline alignment  
17 angle point leaving Houston Mesa Road
- 18 4. Clearing on east side of Houston Mesa Road between the Second and Third crossings
- 19 5. South of Beaver Valley Estates subdivision at an existing gravel pit
- 20 6. East of Mesa del Caballo subdivision, on the east side of Houston Mesa Road
- 21 7. Home Depot parking lot

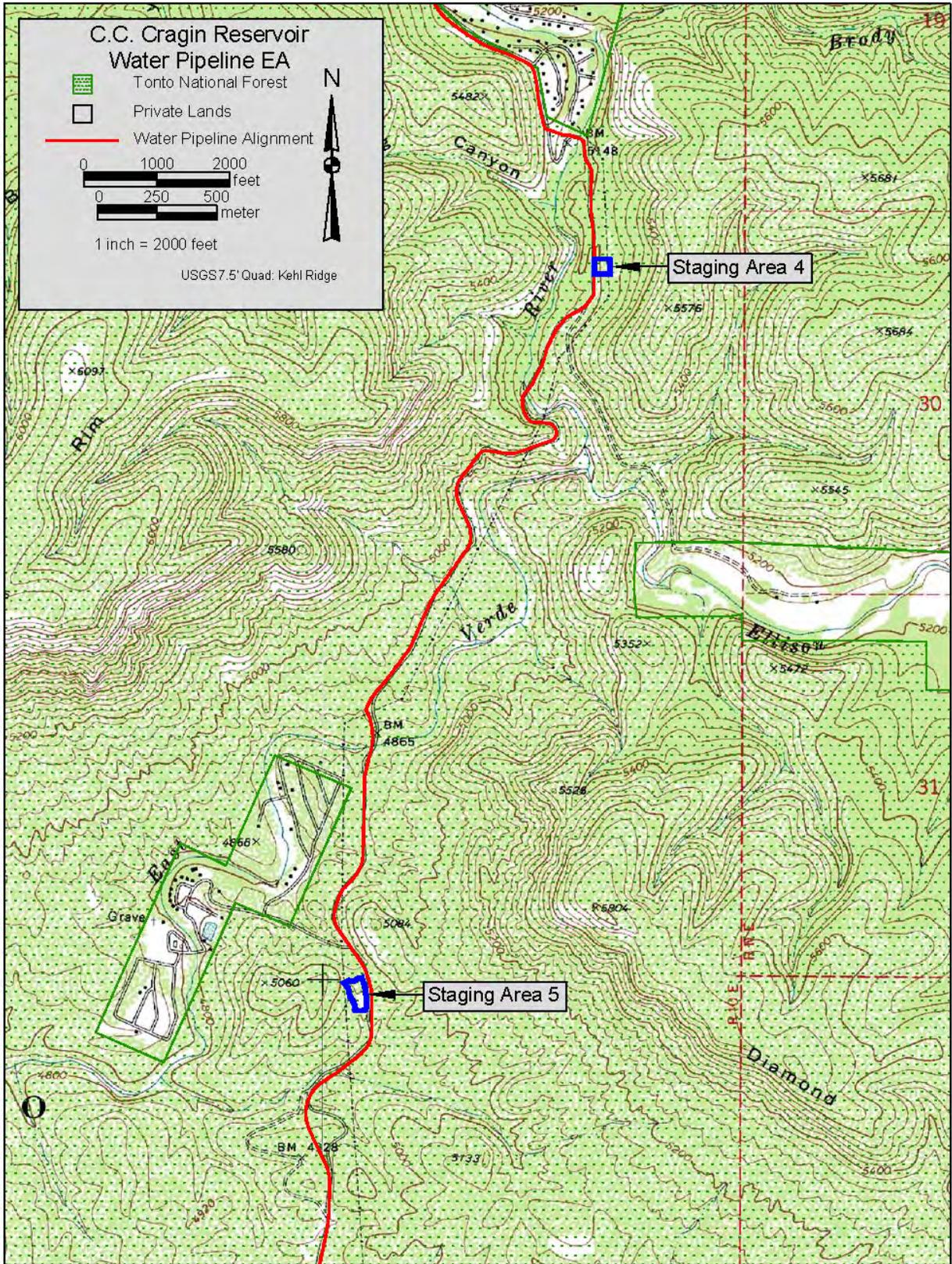
22 Water would be used during construction for dust abatement, to reduce fugitive dust and particulate  
23 matter. Daily water needs would depend on ambient conditions and activities that require abatement.  
24 Water would come from one of three sources, as necessary; the three potential sources would be the  
25 allocated 3,000 af of C.C. Cragin Reservoir water, reclaimed water from the NGCSD, or private wells  
26 located in the residential areas along the project alignment.

## 27 **Operation**

28 Following is a description of the water pipeline's alignment operational requirements that would occur  
29 under all action alternatives. The pipeline would originate at the existing SRP tailrace, located in  
30 Washington Park, at the base of the Mogollon Rim at the C.C. Cragin Powerhouse. The pipeline would  
31 penetrate the tailrace conduit immediately downstream of the power turbine within the fenced yard of the  
32 powerhouse. The pipeline would then follow, to a large extent, existing FR 32B, FR 32, FR 64, FR 199,  
33 and West Houston Mesa Road, with some deviations, described below under each alternative. Most  
34 sections of the pipeline would be located underground, beneath the existing roadway or in the existing  
35 shoulder (except as determined infeasible or impossible by engineering). Related surface facilities may  
36 include (but would not be limited to) flow meter vaults, drain valves and drain lines, isolation valves, air  
37 relief valves, cathodic protection stations, and pressure reducing stations. The permanent operational  
38 utility easement would be 10 feet wide. The water would be delivered via an 18-inch-diameter pipe.



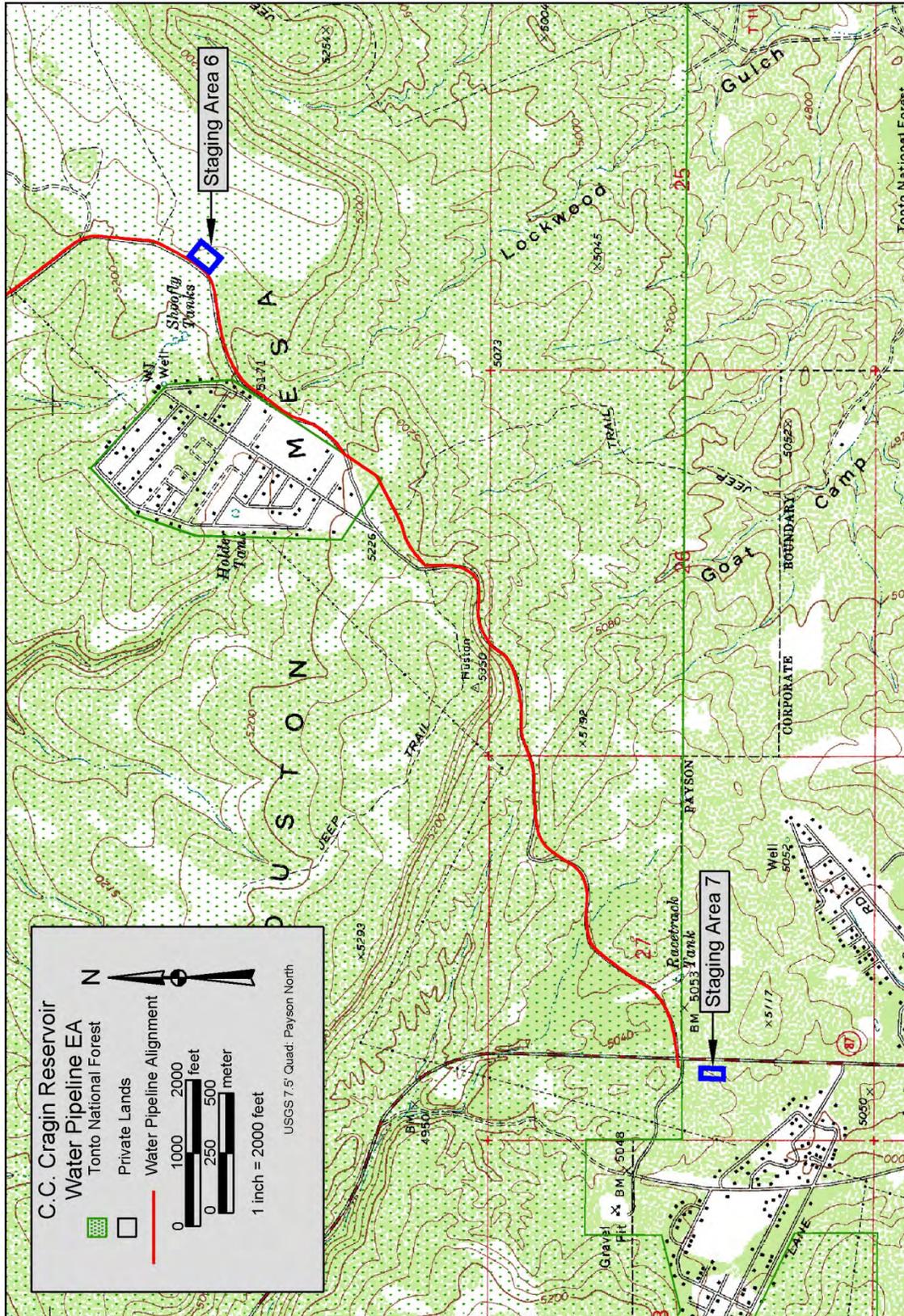
1  
2 **Figure 2.1.** Proposed staging area locations, north portion of project area



1

2

Figure 2.2. Proposed staging area locations, central portion of project area.



1  
2

Figure 2.3 Proposed staging area locations, south portion of project area.

1 The pipeline would direct a combined flow of 3,000 gallons of water per minute (constantly) over a nine-  
2 month period. The pipeline would be designed for up to an annual average 3,500 af of water from the  
3 C.C. Cragin Reservoir to the Town for municipal potable use. SRP does not typically operate the tailrace  
4 during the winter months; thus, the Town would use existing wells during this low-demand time of year.

5 Water pressure in the pipeline varies, based on the elevation of the pipeline alignment route. At the north  
6 end of the pipeline, where it connects to the SRP tailrace, water pressure is zero; from there, pressure  
7 increases as water travels downhill (south). The average pressure in the proposed pipeline would be  
8 roughly 200 pounds per square inch (psi), but it could reach as much as 400 psi at the lowest points in the  
9 line. Based on design details to be determined during engineering design, pipeline materials would be  
10 selected, and the pipeline would be constructed to handle the “worst case scenario” of pressure surges,  
11 etc., to ensure that there would be no pipeline breaks.

12 Drainage considerations for the pipeline would be the same for all alternatives. Construction activities  
13 would not be allowed when the potential for stormwater runoff in the area of work is imminent. If the  
14 potential for a rainfall event is imminent and during off-working hours, all areas of work would be  
15 properly secured and stormwater BMPs enacted to ensure that the potential for impacting surface water  
16 quality during construction is minimized. Depending on field conditions, some surface improvements  
17 may be required for long-term protection of the installed pipeline from erosion caused by stormwater  
18 runoff. Such improvements might include riprap protections, seeding, or other approved surface  
19 preservation methods.

20 All the pipeline action alternatives, in any combination, would tie in to the existing Town water  
21 distribution system at the same location (see Existing Infrastructure Tie-ins, below). Similarly, all the  
22 action alternatives would use the same facilities to deliver and store treated C.C. Cragin water that is not  
23 needed for direct delivery (see Water Storage, below).

## 24 **Maintenance**

25 Maintenance of the water pipeline post-construction and during the operation would include the  
26 following: seasonal removal of all water in the pipeline at the onset of winter to prevent freezing, annual  
27 air-relief valve inspection, and annual pressure testing of the pipeline. Permanent access to the pipeline  
28 would be along existing roads (FR 32B, FR 32, FR 64, FR 199, Box Elder Lane, and West Houston Mesa  
29 Road).

## 30 **Reclamation**

31 Reclamation activities would be determined based on pipeline installation location—shoulders, paved  
32 roads, unpaved roads, and forested areas. General reclamation activities are described below.

33 **Shoulder.** Areas where the pipe is installed in the shoulder would be re-graded to pre-construction  
34 conditions above the pipe excavation. Pipeline trenches would be backfilled and compacted once pipe  
35 installation is complete.

36 **Paved Road.** Areas where the pipe would be installed under the paved road would require saw-cutting  
37 and removing or processing the existing asphalt. Once asphalt removal is complete, the pipe would be  
38 installed, the trench backfilled, and the pipe trench fill compacted. Asphalt would be replaced with new  
39 aggregate base course and asphalt in any areas where it was removed and restored to pre-construction  
40 conditions.

1 **Unpaved Road.** Areas where the pipe would be installed under the unpaved road would require  
2 excavation, as described above under “Shoulder” reclamation activities. Once excavation is complete, the  
3 pipe would be installed and the backfill of the pipe trench would be compacted. Finally, the removed road  
4 surface over the trench would be replaced with material (i.e., crushed rock) similar to the original road  
5 surface. This will be followed up by replacing the removed road surface over the trench with material  
6 similar to the pre-construction material.

7 **Forested Areas.** Alternatives that traverse undisturbed “forested areas,” including portions of  
8 Alternatives 2 and 3, would require some tree removal. The contractor and the Town would coordinate  
9 with the Forest Service to determine tree removal needs. Once trees are removed, topsoil over the trench  
10 would be pushed to the side of the trench, and all excavation material would be placed or processed on the  
11 opposite side of the trench. Once the pipe is installed, the backfill in the trench would be compacted and  
12 the topsoil placed back over the top of the excavated area. The Town would consult with the Forest  
13 Service to determine the appropriate seed mix for revegetation of excavated area.

## 14 **Alternative 1 – Original Proposed Water Pipeline Alternative**

15 The original Proposed Action, as presented in the Town’s SF299 Special Use Permit Application and  
16 during public scoping meetings, followed existing FR 32B, FR 32 (Washington Park Road), FR 64  
17 (Control Road), FR 199 (Houston Mesa Road), and West Houston Mesa Road, beginning in Washington  
18 Park. The proposed pipeline would be located on the Payson Ranger District of the TNF in Sections 1, 2,  
19 11–14, 23, 24, 26, and 27, Township 11 North, Range 10 East; Sections 24, 25, 35, and 36, Township  
20 11½ North, Range 10 East; and Sections 23, 26, 27, 33, and 34, Township 12 North, Range 10 East  
21 (USGS Payson North and Kehl Ridge, Arizona, 7.5-minute quadrangles).

22 As described above in Features Common to All Pipeline Alternatives, the pipeline would originate at the  
23 tailrace conduit. Alternative 1 exits the tailrace and would follow the SRP Access Road to Upper East  
24 Verde Road and continue south to Control Road and Houston Mesa Road (FR 32B, FR 32, FR 64, and  
25 FR 199, respectively) (Figures 2.4 and 2.5). The pipeline would be placed generally on the west side of  
26 the road. Where conditions such as curves in the road, utility interactions, or topography issues are  
27 present, the pipeline would shift to the opposite side of the road, as described below.

28 At Chase Creek, the alignment shifts to the east side of FR 32, then shifts back to the west side of the road  
29 at the Rim Trail community. Just north of the Third Crossing, the proposed alignment would bisect a  
30 Houston Mesa Road switchback for approximately 200 feet of Forest Service lands before continuing  
31 along the western shoulder of the road at the Whispering Pines community. The pipeline would continue  
32 to be located off the western shoulder at Houston Mesa Road, but would include some sections that would  
33 occur in the southbound lane of Houston Mesa Road. The proposed pipeline would be located to the west  
34 of the Houston Mesa Road shoulder, immediately north of the Third Crossing, until the Second Crossing  
35 of the East Verde River, where the alignment would shift to the east shoulder of Houston Mesa Road.  
36 The pipeline would be buried approximately 50 feet east of the low-water vehicle crossing. Because the  
37 pipeline would be buried below the surface and would be backfilled using the excavated material,  
38 a floodplain permit would not be required. The proposed pipeline would then continue south off the  
39 eastern shoulder of Houston Mesa Road to the First Crossing of the East Verde River. Just south of  
40 Beaver Valley, topographic constraints would require that the pipeline be located in the northbound lane  
41 of Houston Mesa Road for approximately 600 feet. Along Houston Mesa Road, the pipeline would be  
42 buried east of the road, off the shoulder.

43 Alternative 1 does not deviate from these road beds at any location, except at the Third Crossing  
44 switchback. Alternative 1 would follow the existing road beds through the residential areas of Rim Trail,  
45 Whispering Pines, and Mesa del Caballo. In addition, Alternative 1 would cross the East Verde River in

1 the same locations as the road bed crossings. During construction, Alternative 1 would require traffic  
2 control measures at residential areas, water crossings, narrow road bed areas, and pull-off/parking areas.

3 There are three locations where the Alternative 1 proposed alignment would need to cross the East Verde  
4 River. As a result of geological conditions of the river bottom (cobbles, solid rock), the river would need  
5 to be open-cut in order to construct the pipeline. Construction activities within the floodplain and river  
6 bed would comply with all applicable nationwide and State of Arizona requirements.

## 7 **Alternative 2 – Proposed Action Alternative**

8 The Alternative 2 alignment of the pipeline is based on the Original Proposed Water Pipeline Alternative,  
9 described above, with two alignment differences, described below. As with Alternative 1, this alternative  
10 would be located north of the Town and would generally follow existing FR 32B, FR 32 (Washington  
11 Park Road) – also known as Belluzzi Boulevard in Rim Trails, FR 64 (Control Road), FR 199 (Houston  
12 Mesa Road), and West Houston Mesa Road (see Figures 2.4 and 2.5).

13 The legal description for Alternative 2 is the same as for Alternative 1: Sections 1, 2, 11–14, 23, 24, 26,  
14 and 27, Township 11 North, Range 10 East; Sections 24, 25, 35, and 36, Township 11½ North, Range  
15 10 East; and Sections 23, 26, 27, 33, and 34, Township 12 North, Range 10 East (USGS Payson North  
16 and Kehl Ridge, Arizona, 7.5-minute quadrangles).

17 The first pipeline reroute under Alternative 2 would occur at the tailrace conduit near Washington Park,  
18 east of FR 32 and south of the eastern end of FR 32B, in Section 23, Township 12 North, Range 10 East  
19 (see Figure 2.4). The pipeline would not follow the SRP Access Road after it exits the tailrace; instead,  
20 the pipeline would exit the tailrace and traverse undeveloped land between the SRP Access Road and the  
21 community of Rim Trail for approximately 900 feet. From this point, the pipeline would turn south  
22 and follow Harvest Lane for approximately 600 feet, where it would then follow Box Elder Lane for  
23 approximately 225 feet. At the end of Box Elder Lane, the pipeline would resume the route along FR 32  
24 (also known as Belluzzi Boulevard) described under Alternative 1 (see Figure 2.4). The acquisition of  
25 additional temporary and permanent construction easements would occur under a separate authorization  
26 and is not included as part of this EA.

27 The second pipeline reroute under Alternative 2 would occur west and north of the Whispering Pines  
28 subdivision, where the pipeline would depart from the road alignment approximately 2,250 feet (at the  
29 farthest point) west of FR 199, east of Bear Canyon, and south of FR 64 in Section 24, Township 11½  
30 North, Range 10 East and Section 34, Township 12 North, Range 10 East. The distance of this alignment  
31 would be 700 feet shorter than Alternative 1; however, it would require ground disturbance in areas of the  
32 TNF that are currently undisturbed. Disturbance would be kept to a minimum by following existing  
33 unimproved forest roads where possible (see Figure 2.4). The pipeline reroute would reunite with  
34 Houston Mesa Road and continue on the Alternative 1 alignment.

35 Alternative 2 would require the same methods for the crossings of the East Verde River as Alternative 1.



Figure 2.4. Overview of pipeline and WTP alternatives, north portion of project area.

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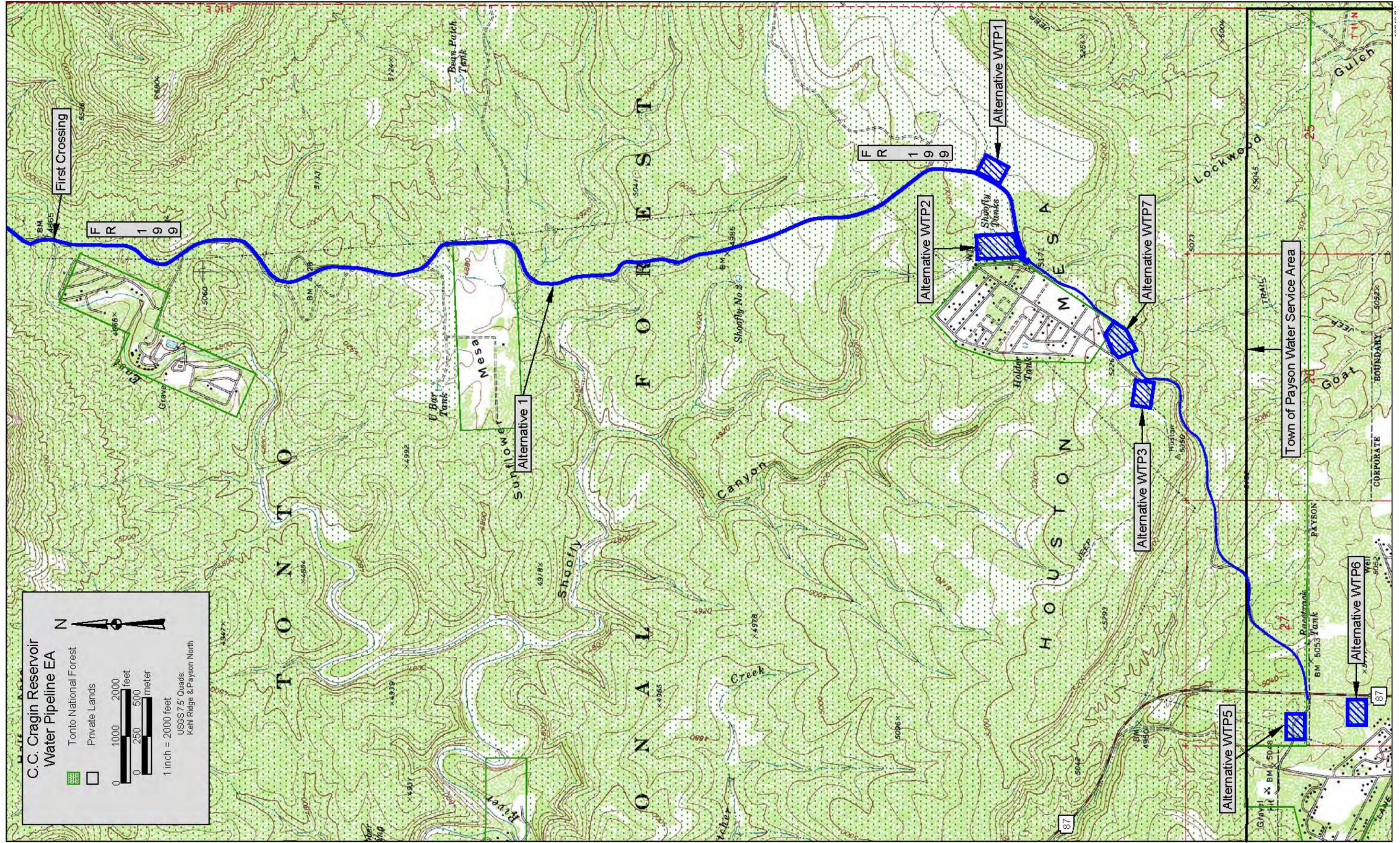


Figure 2.5. Overview of pipeline and WTP alternatives, south portion of project area.

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## Alternative 3 – Gila County Alignment Alternative

As with Alternative 2, the proposed pipeline would generally follow existing FR 32B, FR 32 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa Road), and West Houston Mesa Road. The Alternative 3 pipeline alignment would depart approximately 1,200 feet west of Houston Mesa Road (FR 199) for approximately 7,500 feet south of the Whispering Pines subdivision (see Figure 2.4). Ground disturbance during construction would occur along the 7,500-foot length for an area measuring 30 to 50 feet wide; this width would allow for construction, installation of the pipeline, and an access road. Due to topographical conditions, the full 200-foot construction ROW would not be feasible. The majority of this alternative alignment would traverse Forest Service lands along FRs 1563 and 1564.

The legal description for Alternative 3 is the same as for Alternatives 1 and 2: Sections 1, 2, 11–14, 23, 24, 26, and 27, Township 11 North, Range 10 East; Sections 24, 25, 35, and 36, Township 11½ North, Range 10 East; and Sections 23, 26, 27, 33, and 34, Township 12 North, Range 10 East (USGS Payson North and Kehl Ridge, Arizona, 7.5-minute quadrangles).

Gila County requested development of this alternative to bypass the Second and Third crossings of the East Verde River in order to address public health and safety concerns. In addition, Alternative 3 would avoid the potential for East Verde River flood damage to the pipeline, which could occur under Alternatives 1 and 2.

The topography would require the design, construction, and maintenance of a new road bed through terrain in an undisturbed area for the pipeline. This roadway would require maintenance to prevent erosion and degradation.

Alternative 3 would require the same methods for managing surface water runoff as Alternative 1.

## WATER TREATMENT PLANT ALTERNATIVES CONSIDERED IN DETAIL

Following is a description of seven WTP site locations considered in detail. These WTP locations were identified through internal ID Team scoping and alternative development efforts, engineering considerations, and public comments. The major components of each WTP alternative in terms of size, facility requirements, etc., are the same and are described below under Features Common to All Water Treatment Plant Alternatives. The major differences for each alternative are location and land management (i.e., land status), described under each alternative below.

## Water Treatment Plant Features Common to All Alternatives

### *Construction*

Each WTP site would require site preparation, including vegetation removal and terrain leveling by grading, in order to accommodate the facilities described below. Eight-foot-high chain-link fencing would also be installed around the perimeter of the WTP site. Access to the site during construction would be via existing roads (FR 32B, FR 32, FR 64, FR 199, and West Houston Mesa Road).

As with pipeline construction described above, water for dust abatement would be used during construction of the WTP. Daily water needs would depend on ambient conditions and activities that require abatement. Water would come from one of three potential sources, as necessary: the allocated

1 3,000 af of C.C. Cragin Reservoir water, reclaimed water from the NGCSD, and/or private wells located  
2 in the residential areas along the project alignment.

### 3 **Operation**

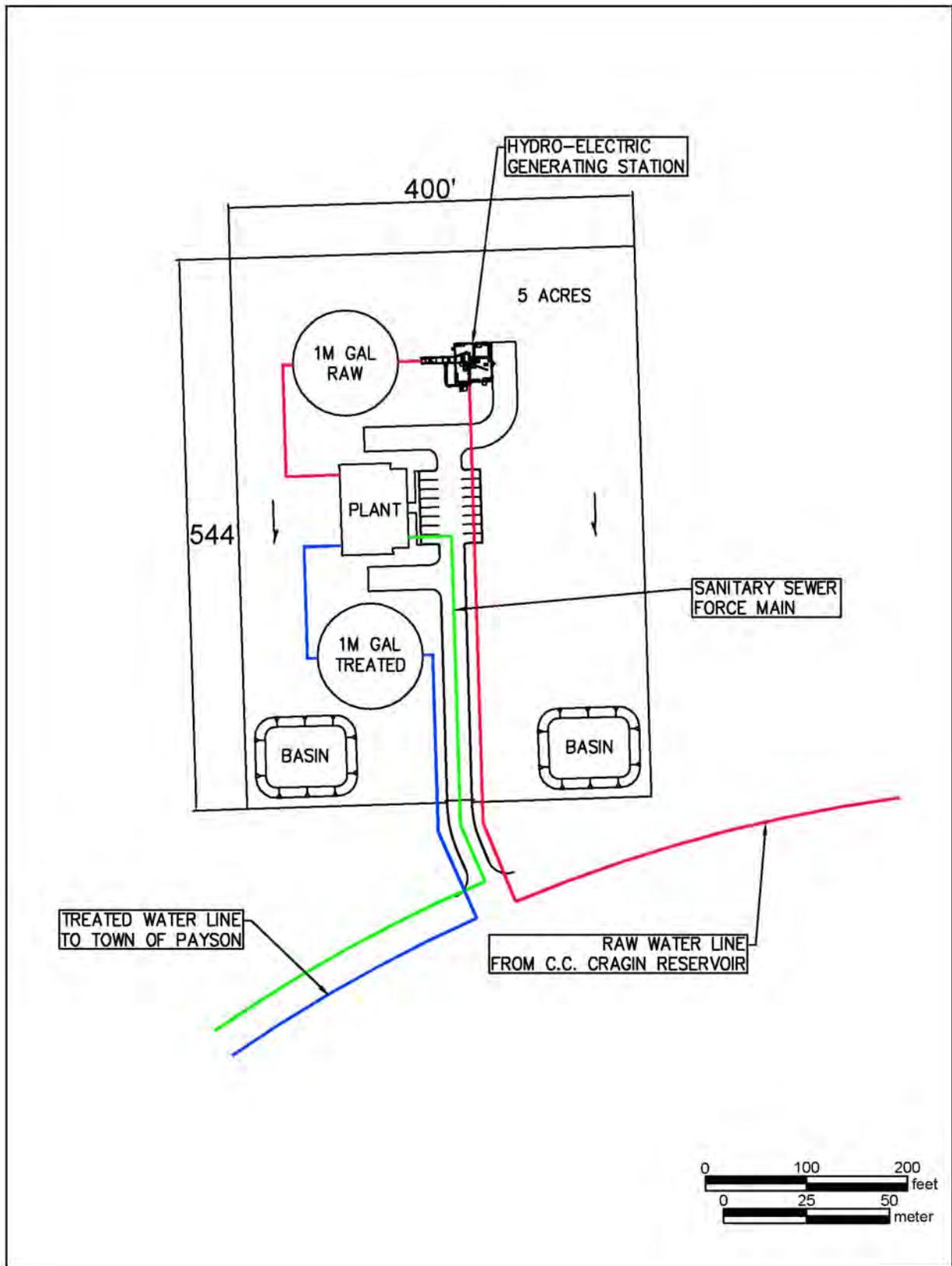
4 The WTP facility would include one building, two aboveground (at-grade) storage tanks, and a pump  
5 station. The storage tanks would include one 1- to 2-million-gallon finished water tank and one 2-million-  
6 gallon raw water permanent storage tank. Permanent access to the WTP would be along existing roads  
7 (FR 32B, FR 32, FR 64, FR 199, and West Houston Mesa Road). Some small, solar energy-powered  
8 installations may also be required for water pressure and water quality monitoring instruments. The WTP  
9 site must be at least 5 acres, as shown on the conceptual WTP design in Figure 2.6. Depending upon the  
10 specific site characteristics, a hydrogenation plant could be included, which would generate electricity  
11 that would be used by the WTP.

12 Surface water runoff attributed to the proposed WTP site would be contained on-site both during  
13 construction and upon project completion and operation. The nationwide NPDES permit would be in  
14 effect, and a SWPPP would be implemented and maintained for the site during construction. Upon  
15 completion of the project, runoff from the site would be retained in on-site retention basins, and no runoff  
16 would be allowed to leave the site. Any drainageways or drainage patterns that existed on the site or  
17 immediately upstream of the site prior to construction would be routed through or around the site and  
18 discharged to their original locations.

### 19 **EXISTING INFRASTRUCTURE TIE-INS: TREATED WATER LINE AND SEWER LINE**

20 The location and alignment of any new pipeline that would be needed to transport potable water to the  
21 existing Town water distribution system cannot be identified until the final location of the WTP is  
22 determined. Similarly, any new pipeline that would need to be installed to transport waste discharge from  
23 the WTP to the existing NGCSD WWTP sewer lines cannot be identified until the final location of the  
24 WTP is determined. WTP1–3, WTP5, and WTP6–7 alternatives are adjacent to Houston Mesa Road.  
25 An existing sewer line is located within 150 and 800 feet, depending on the WTP alternative. A portion of  
26 the buried pipeline would be located within the WTP site itself; the remaining alignment would generally  
27 follow road ROWs where practicable. There is no sewer line in the vicinity of WTP4; therefore, under  
28 this alternative, a new process waste/sewer holding tank would need to be constructed within the WTP  
29 site. The waste discharge would be transported by truck to the NGCSD WWTP for final disposal.  
30 The existing infrastructure specific to each WTP alternative is discussed below under each WTP  
31 alternative.

32 Any wastewater discharge from WTP operations located along Houston Mesa Road would be discharged  
33 via existing sewer line to the NGCSD WWTP in Payson. The potential wastewater discharge would  
34 include water from daily operations in the plant (e.g., hand-wash basin) and water used during filter  
35 cleaning/replacement. The NGCSD WWTP is located west of downtown Payson on Doll Baby Road,  
36 approximately 3.25 miles from the southern terminus of the proposed water pipeline. Preliminary  
37 discussions between the Town of Payson and NGCSD indicate existing sewer lines would have adequate  
38 capacity to handle the wastewater discharge associated with the WTP. Once a decision by the Forest  
39 Supervisor has been made regarding the location of the WTP, detailed design work will need to be  
40 undertaken to determine what alterations, if any, are required to properly connect the WTP to the existing  
41 infrastructure. Existing sewer lines are located from Mesa del Caballo to the southern terminus of the  
42 Proposed Action alignments. The route and specifics of the sewer line are included in each WTP  
43 alternative discussion.



1  
2

**Figure 2.6.** Typical water treatment plant layout.

1 The specifics of how the new proposed sewer line would connect to the existing system are under  
2 development but would generally include installation of a new force main that connects to the existing  
3 force main for the NGCSD, as described under each WTP alternative.

#### 4 **ELECTRICITY**

5 Electricity for the WTP sites would be required to provide primary power for the facility. Hydroelectric  
6 power would be used to supplement the regular power supply (see below). The facility would require  
7 three-phase power (three wires), transmitted via a 20- to 60-foot-tall power line. All existing lines that the  
8 project would tie-in to are aluminum conductor-steel reinforced 21-kilovolt (kV) three-phase power lines.  
9 The known route and specifics of the power line are included in each WTP alternative discussion; final  
10 designs and discussions with Arizona Public Service (APS) of the three-phase power tie-in are ongoing.

11 The specifics of how the new project power line would connect to the existing APS system are under  
12 development. The connection could include components such as a transformer, switch gears, etc.;  
13 however, the design of these features will depend on the location of the WTP.

#### 14 **HYDROELECTRICITY**

15 If feasible, power generation would be used as a secondary function of delivering 3,000 af of water to the  
16 WTP using power-generating turbines. The power-generating turbines would be housed in a separate  
17 building adjacent to the proposed WTP, where the water pipeline enters the WTP. The turbine tailrace  
18 should be located above the high-water elevation of WTP in order to retain the required pressure of 25 to  
19 30 psi in order to force flow through the WTP. At the designated flow rate, the system would produce  
20 approximately 234 kilowatts. Power generated would primarily be used to run the WTP. If excess power  
21 is generated, it could be put back into the power grid via the power lines that provide non-hydroelectric  
22 power to the site.

23 In order to interact with existing APS facilities, several components, including switchgear, power panels,  
24 transformers, meters, and safety equipment, would be required. Protective relaying equipment would  
25 ensure that power generated by the hydroelectric turbine does not affect the operating characteristics of  
26 the existing APS system by causing power surges, voltage drops, or frequency fluctuations. The length of  
27 the linear features would depend on selection of the WTP; however, the site would require connection to a  
28 telephone line and a three-phase power line.

29 A building (measuring roughly 24 × 32 feet) would be required to house the turbine, generator, valves,  
30 switch gear, control panel, station transformer, hydraulic power system, hoist, and equipment. The noise  
31 generated from the hydroelectric turbine would be mitigated by berming and enclosing the turbine within  
32 the building. The hydroelectric turbine would not be manned and would be operated remotely.

33 The Federal Energy Regulatory Commission (FERC) has exclusive authority to regulate all non-federal  
34 hydropower projects on navigable waters and federal land. Preliminary Permit FERC exemptions are  
35 available under other certain circumstances, such as the operation of small, 15-megawatt or less,  
36 hydroelectric facilities. It is anticipated that the proposed project will pursue an exemption from FERC  
37 licensing. The location of the WTP—whether on federal or private land—will determine the level of  
38 FERC exemption.

#### 39 **WATER STORAGE**

40 Once engineering designs have been completed and the proposed existing wells that would be used as  
41 ASR wells have been determined, the Town would need to obtain permits from ADWR as required by  
42 ARS 45-596 and Arizona Administrative Code R12-15-810. Treated water from the WTP, which is not  
43 needed for direct use, would be delivered and injected into these wells using the existing water

1 distribution system. During times when direct water supplies from the WTP are not available, water  
2 would be pumped and delivered from these same wells. Some internal well equipment would need to be  
3 replaced in order for these wells to function as both injection and recovery wells; however, no additional  
4 land-disturbing activities would be required. Because this aspect of the proposed project would not result  
5 in any land-disturbing activities, the water storage component is only discussed where impacts would  
6 likely occur to a given resource, i.e., Water Resources in Chapter 3.

7 The pipeline and WTP are expected to be offline during the winter months (November to March) each  
8 year. During the times of surplus deliveries (supply exceeding system demands), the Town would store  
9 water in existing wells that would be designated and permitted as ASR. Although it is currently unknown  
10 which of the Town's existing wells would be designated, the wells would be located on Town-owned  
11 land. The excess water would be transported in the proposed pipeline and tie in to existing water  
12 infrastructure. No additional ground disturbance or facilities outside the tie to existing water infrastructure  
13 would be required.

14 The ASR wells would use the existing water distribution infrastructure to both store and recover any  
15 surplus treated Cragin water delivered to the system. Before Cragin water reaches the Town distribution  
16 system, it would be disinfected and would carry residual chlorine. Additionally, the water would need to  
17 be "buffered" before entering the distribution system and/or ASR wells. The chemical buffering would be  
18 conducted by adding lime to the water treatment finishing process at the WTP. At the ASR wells, chlorine  
19 and disinfection byproducts would be removed prior to injection. Routine operation and maintenance of  
20 the ASR wells would include pumping each well once per week to prevent clogging of the wells.

## 21 **Maintenance**

22 Maintenance of the WTP during operation includes the following: plant operations, annual pressure  
23 testing, water filter cleaning/replacement, and chlorine application/replacement. Permanent access to the  
24 WTP would be along existing roads (FR 32B, FR 32, FR 64, FR 199, and West Houston Mesa Road).

## 25 **Reclamation**

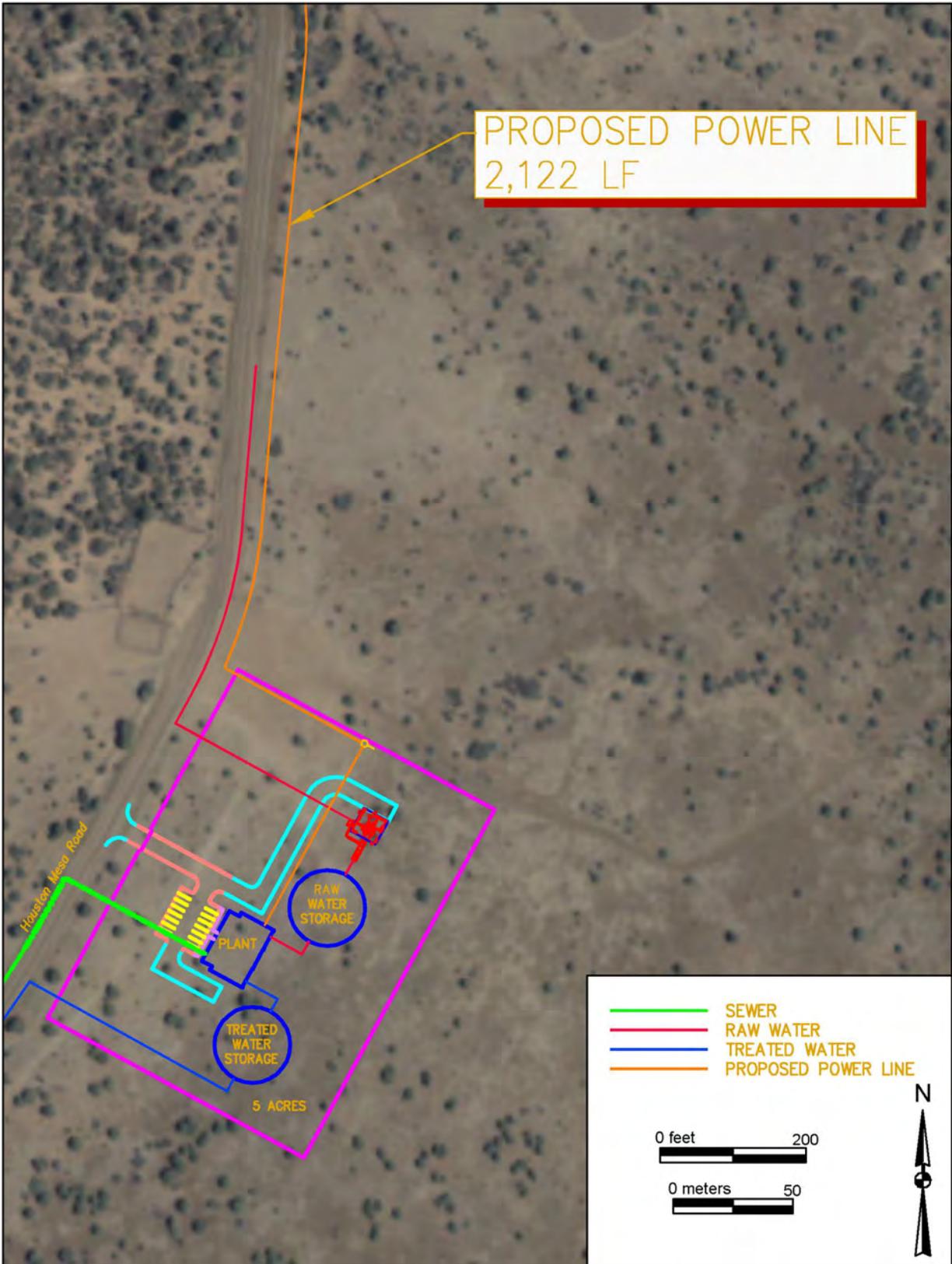
26 Although the proposed WTP would include some landscaping, no reclamation activities are planned for  
27 the WTP site.

## 28 **Alternative WTP1 – Shoofly South**

29 The location of the Alternative WTP1– Shoofly South, as presented in the Town's SF 299 Special Use  
30 Permit Application and to the public during scoping, is on the east side of Houston Mesa Road, south of  
31 Shoofly Ruins, on lands managed by the Forest Service. WTP1 would be located in Sections 23 and 24,  
32 Township 11 North, Range 11 East (USGS Payson North, Arizona, 7.5-minute quadrangle). The 5-acre  
33 site is disturbed, has been cleared of vegetation, is approximately 3 miles from the town of Payson limits,  
34 and is accessible via paved road (West Houston Mesa Road) (Figure 2.7).

35 The WTP1 site is cleared, with little vegetation immediately surrounding the site. The location of WTP1  
36 would not require access via low-water crossings. The existing topography of the site is relatively flat  
37 (site slope 3.8%) and is situated at an elevation that would allow for the flow of water into the Town's  
38 water system pressure zones via gravity feed. Elevation of the site would also allow for on-site  
39 hydroelectric power generation.

40 As previously noted, access to an electrical transmission supply system would be required to provide  
41 primary power to the WTP facility. The WTP1 site is located south of an existing 21-kV three-phase  
42



1

2 **Figure 2.7.** Layout of Alternative WTP1, including power, sewer, and raw and treated water.

1 power system. A new WTP power line would be constructed that extends approximately 2,100 feet north  
2 along the east side of Houston Mesa Road, on NFS lands (see Figure 2.7).

3 Further, as previously noted, access to a sewer system would be necessary in order to remove wastewater  
4 from the site. WTP1 would require the construction of an approximately 390-foot-long sewer line  
5 extension, south to the existing NGCSD sewer system at Mesa del Caballo (see Figure 2.7).

6 Because WTP1 is located on NFS lands, selection of Alternative WTP1 would require authorization,  
7 under a decision separate from this EA, of purchase of the site under the National Forest Townsite Act.  
8 The National Forest Townsite Act of July 31, 1958 (72 Stat. 483; 7 USC 1012a; 16 USC 478a), as  
9 amended by Section 213 of the Federal Land Policy and Management Act of 1976 (90 Stat. 2760),  
10 authorizes the Secretary of Agriculture to set aside and designate NFS lands for townsite purposes. Areas  
11 so designated may be sold to any qualifying county, city, or other governmental subdivision. Regional  
12 foresters may convey the designated land at fair market value for townsite purposes upon determining that  
13 1) the land is suitable for community purposes, 2) the community can use the land without creating undue  
14 risk of resource damage to adjoining lands, 3) it is possible to use the land without creating sanitary  
15 problems or endangering public health, and 4) the land is not necessary for more important federal  
16 purposes.

## 17 **Alternative WTP2 – Houston Mesa West**

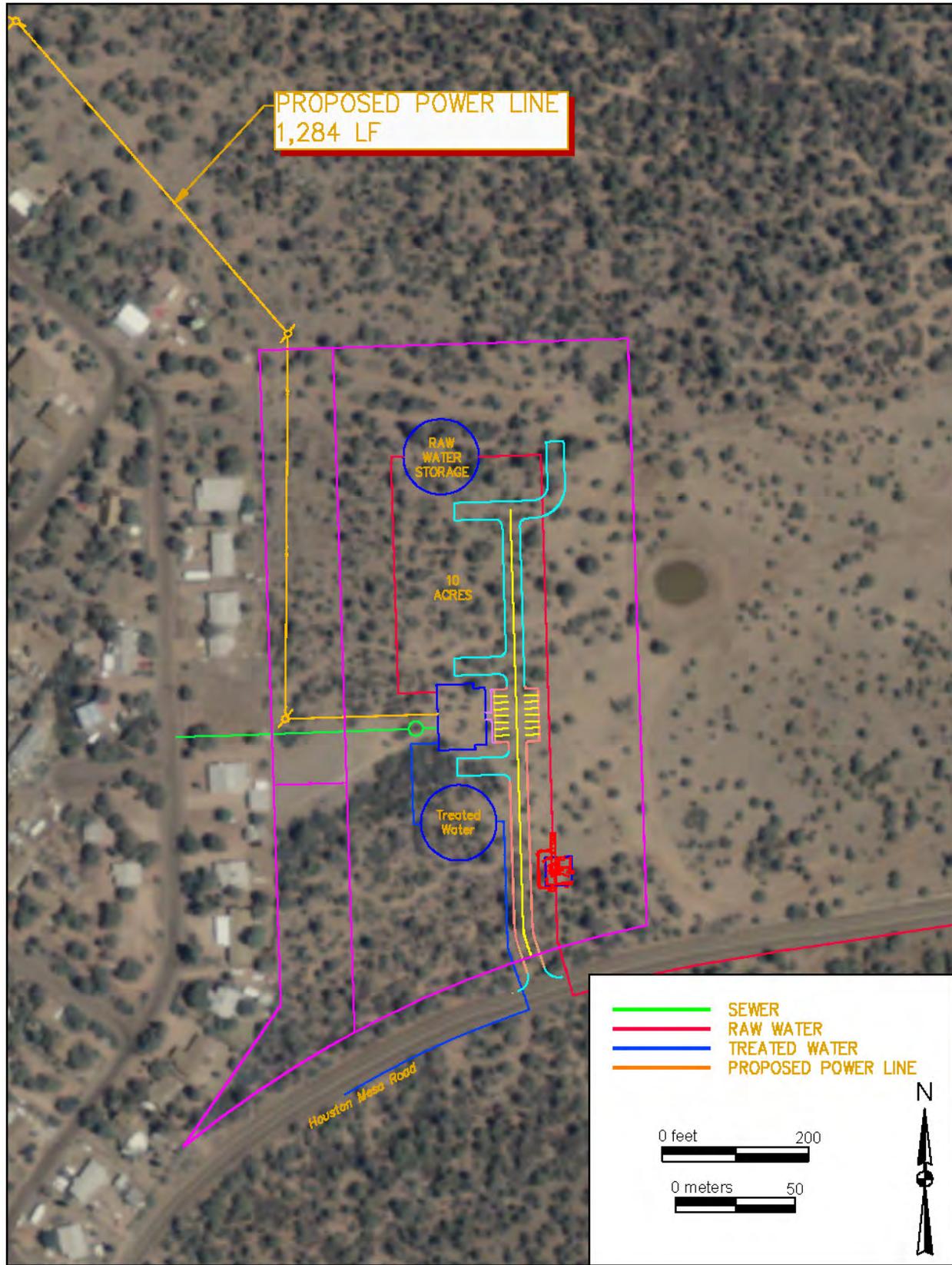
18 Alternative WTP2–Houston Mesa West would be located west of Houston Mesa Road. After preliminary  
19 engineering was conducted, a location along the west side of Houston Mesa Road, north of the Mesa del  
20 Caballo subdivision, was deemed more appropriate from an engineering perspective, based on the site's  
21 proximity to needed infrastructure (sewer, electricity [see below]) at the subdivision. The WTP2 site  
22 would be located on 10 acres of land managed by the Forest Service. The western property line of WTP2  
23 would be along private land; the southern property line would be along Houston Mesa Road, and NFS  
24 lands border the rest (Figure 2.8). The WTP2 would be located in Section 23, Township 11 North, Range  
25 10 East (USGS Payson North, Arizona, 7.5-minute quadrangle). The site is partially disturbed. The  
26 alternative would be located approximately 3 miles from the town of Payson limits and accessible via  
27 paved road (West Houston Mesa Road).

28 As with Alternative WTP1, the existing topography of the site is relatively flat (site slope averages 4.7%)  
29 and would be situated at an elevation that would allow for the flow of water into the Town's water system  
30 pressure zones via gravity feed. The WTP2 site is vegetated. As with WTP1, the location of WTP2 would  
31 not require access via low-water crossings. Elevation of the site would also allow for on-site hydroelectric  
32 power generation; however, as with other WTP alternatives, access to an electrical transmission supply  
33 system would be required in order to power the facility.

34 The WTP2 site is located within 0.5 mile south of an existing 21-kV three-phase power system. WTP2  
35 would require the construction of an approximately 1,284-foot-long WTP power line, stretching north  
36 along the east side of Houston Mesa Road, on NFS lands (see Figure 2.8).

37 WTP2 would require a 333-foot-long sewer line extension south-southwest across NFS lands and  
38 privately owned lands to the existing NGCSD sewer system at Mesa del Caballo (see Figure 2.8).  
39 The WTP sewer line would extend south of the WTP to Houston Mesa Road and connect at a point  
40 southwest of the WTP2 site.

41 Because WTP2 is located on NFS lands, selection of Alternative WTP2–Houston Mesa West would  
42 require authorization of purchase of the site under the National Forest Townsite Act.



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**Figure 2.8.** Layout of Alternative WTP2, including power, sewer, and raw and treated water.

## 1 **Alternative WTP3 – Mesa del Caballo South**

2 Alternative WTP3 would be located east of SR 87, along the west side of Houston Mesa Road, and south  
3 of the Mesa del Caballo subdivision. The site would be on 5 acres of land managed by the Forest Service  
4 in Sections 14 and 23, Township 12 North, Range 10 East (USGS Payson North, Arizona, 7.5-minute  
5 quadrangle) (Figure 2.9). As with Alternatives WTP1 and WTP2, Alternative WTP3 would be located  
6 approximately 3 miles from the town of Payson limits and accessible via paved road (West Houston Mesa  
7 Road).

8 The site is partially disturbed and slopes gently from west to east (site slope averages 8.2%). The WTP3  
9 site is vegetated. The site would also be situated at an elevation that would allow for the flow of water  
10 into the Town's water system pressure zones via gravity feed. Elevation of the site would also allow for  
11 on-site hydroelectric power generation; however, access to an electrical transmission supply system  
12 would be required to power the facility. The location of WTP3 would not require access via low-water  
13 crossings.

14 The WTP3 site is located approximately 1,000 feet south-southeast of an existing 21-kV three-phase  
15 power system that has adequate transmission capacity (three-phase power) for operational use of WTP.  
16 A new WTP power line would be constructed from the WTP to the existing power pole (see Figure 2.9).

17 The location of WTP3 would require a 150-foot-long sewer line extension on Forest Service lands, east to  
18 the existing NGCSD sewer system at Mesa del Caballo. Much of the proposed sewer line would be  
19 located within the proposed WTP facility footprint, exiting the east side of the proposed WTP to Houston  
20 Mesa Road, connecting south of the WTP (see Figure 2.9).

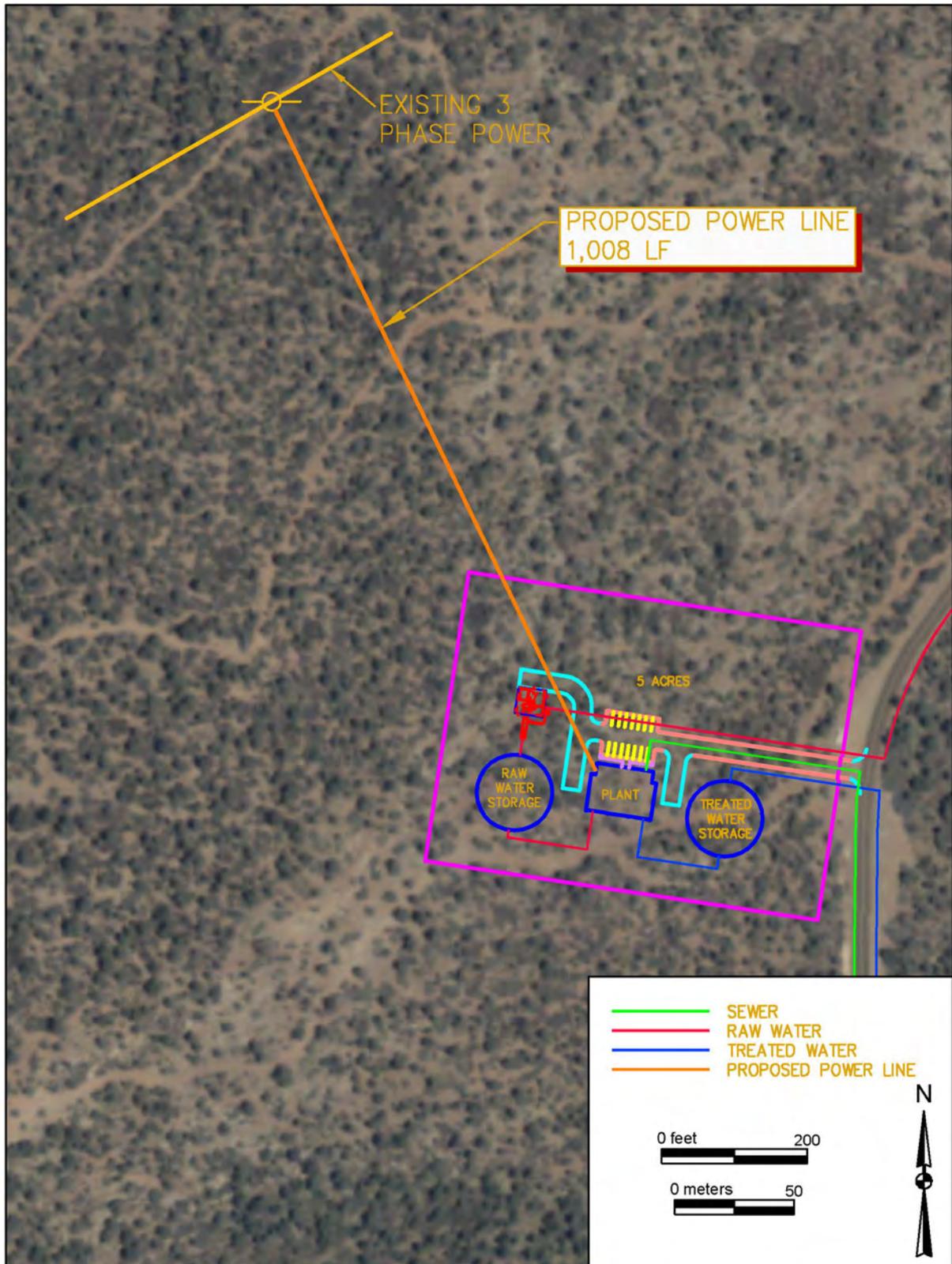
21 Because WTP3 is located on Forest Service lands, selection of Alternative WTP3–Mesa del Caballo  
22 South would require authorization of purchase of the site under the National Forest Townsite Act.

## 23 **Alternative WTP4 – Tailrace Site**

24 Alternative WTP4–Tailrace Site would be along the northern edge of FR 32B near the north end of the  
25 pipeline route, near the SRP tailrace connection. The site would be cut into the hillside immediately west  
26 of the SRP pump station and existing tailrace (Figure 2.10). Placing the WTP4 in this location would  
27 allow for the provision of potable water to all Houston Mesa communities in the future, should those  
28 connections be established. A WTP at this location would not require Houston Mesa communities to  
29 treat their own water, should they negotiate a water allotment from C.C. Cragin Reservoir with the SRP.  
30 The site would be located on 5 acres of land managed by the Forest Service. WTP4 would be located in  
31 Section 24,

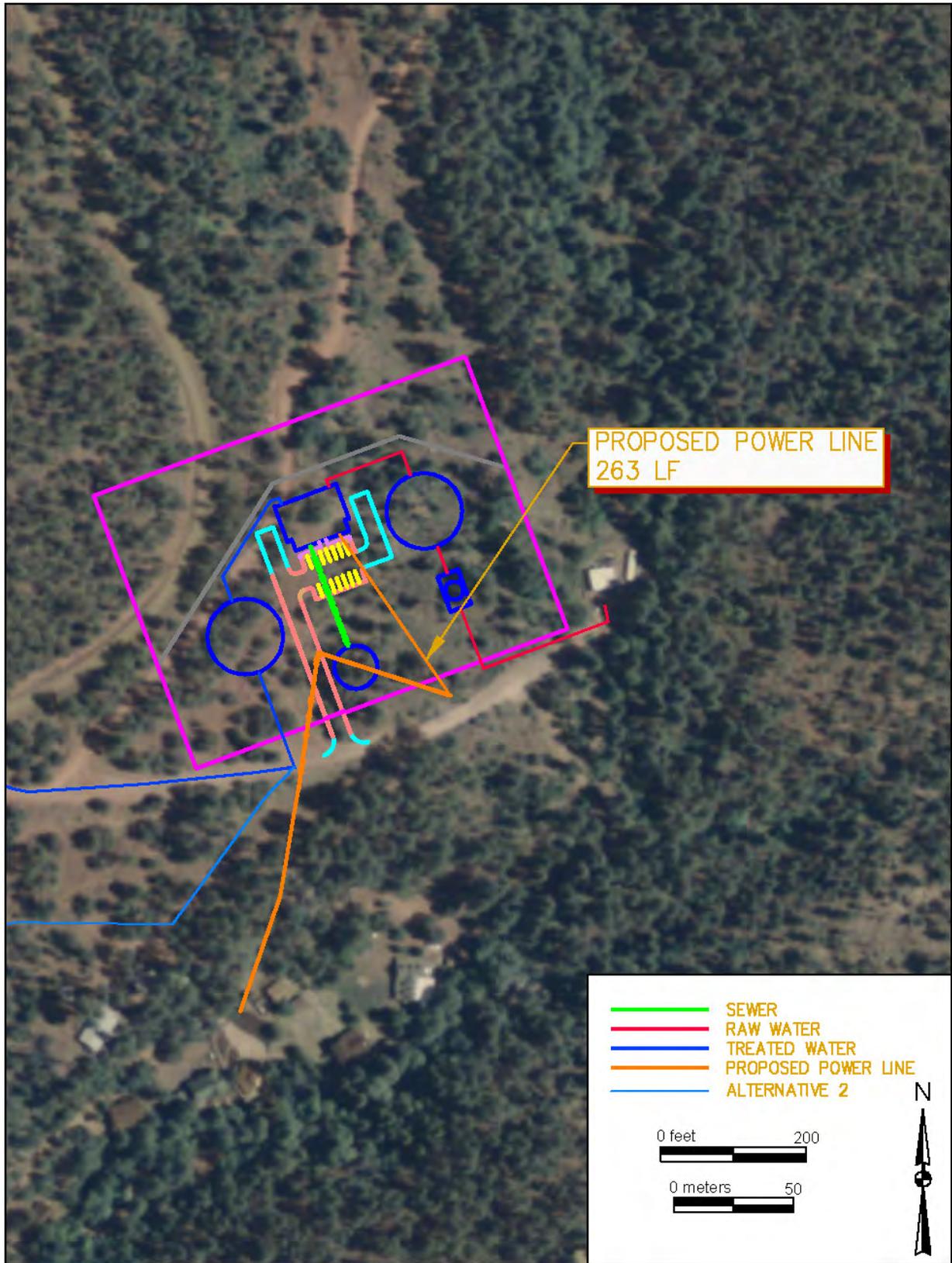
32 Township 11 North, Range 10 East (USGS Kehl Ridge, Arizona, 7.5-minute quadrangle). The site is  
33 generally undisturbed, with mature vegetation across the parcel. Alternative WTP4 would be located  
34 approximately 15 miles from the town of Payson limits and accessible via paved road (West Houston  
35 Mesa Road).

36 The existing topography of the site is not as flat as other WTP options (site slope averages 9.8%).  
37 As noted above, the WTP4 site is generally undisturbed, with mature vegetation across the parcel.  
38 The site would also be situated at an elevation that would allow for the flow of water into the Town's  
39 water system pressure zones via gravity feed. However, a forebay and booster pump would be required to  
40 move water from the SRP tailrace channel to, and through, the WTP. The location of WTP4 would  
41 require access across low-water crossings. Access could also be achieved from the Control Road, which  
42 does not have any low-water crossings. Hydrogeneration would not be feasible with this alternative.



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**Figure 2.9.** Layout of Alternative WTP3, including power, sewer, and raw and treated water.



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**Figure 2.10.** Layout of Alternative WTP4, including power, sewer, and raw and treated water.

1 Although there is power at the tailrace, the connection is used only to send, not receive, power; therefore,  
2 there is no power connection for this alternative. The nearest adequate three-phase power source is  
3 located at Verde Glen, just south of the WTP4 site (see Figure 2.10).

4 WTP4 would result in the water pipeline's carrying treated potable water, not raw water. Additional  
5 treatment of this potable water is not anticipated.

6 There is no access to an existing NGCSD sewer system for WTP4; therefore, a new process waste or  
7 sewer holding tank would be constructed at the WTP. Periodic draining and transportation by truck of the  
8 waste to the NGCSD WWTP would be required.

9 Because WTP4 is located on Forest Service lands, selection of Alternative WTP4 would require  
10 authorization of purchase of the site under the National Forest Townsite Act.

## 11 **Alternative WTP5 – 2100 North Beeline Highway**

12 Alternative WTP5 would be located within the town of Payson at 2100 North Beeline Highway, north of  
13 the Home Depot. The site would be located on 5 acres of land managed by the Forest Service in Section  
14 27, Township 11 North, Range 10 East (USGS Payson North, Arizona, 7.5-minute quadrangle) (Figure  
15 2.11). Access to the site would be via SR 87 (the Beeline Highway) and West Houston Mesa Road.

16 The WTP5 site is partially disturbed and has been cleared of some vegetation; it is located within the  
17 town of Payson limits. The existing topography of the site is slightly undulating (site slope averages  
18 5.8%). The site is not situated in at an elevation that would allow for the flow of water into the Town's  
19 water system pressure zones via gravity feed; therefore, pumps would be required. However, elevation at  
20 the site would provide the needed elevation change to enable on-site hydroelectric power generation.

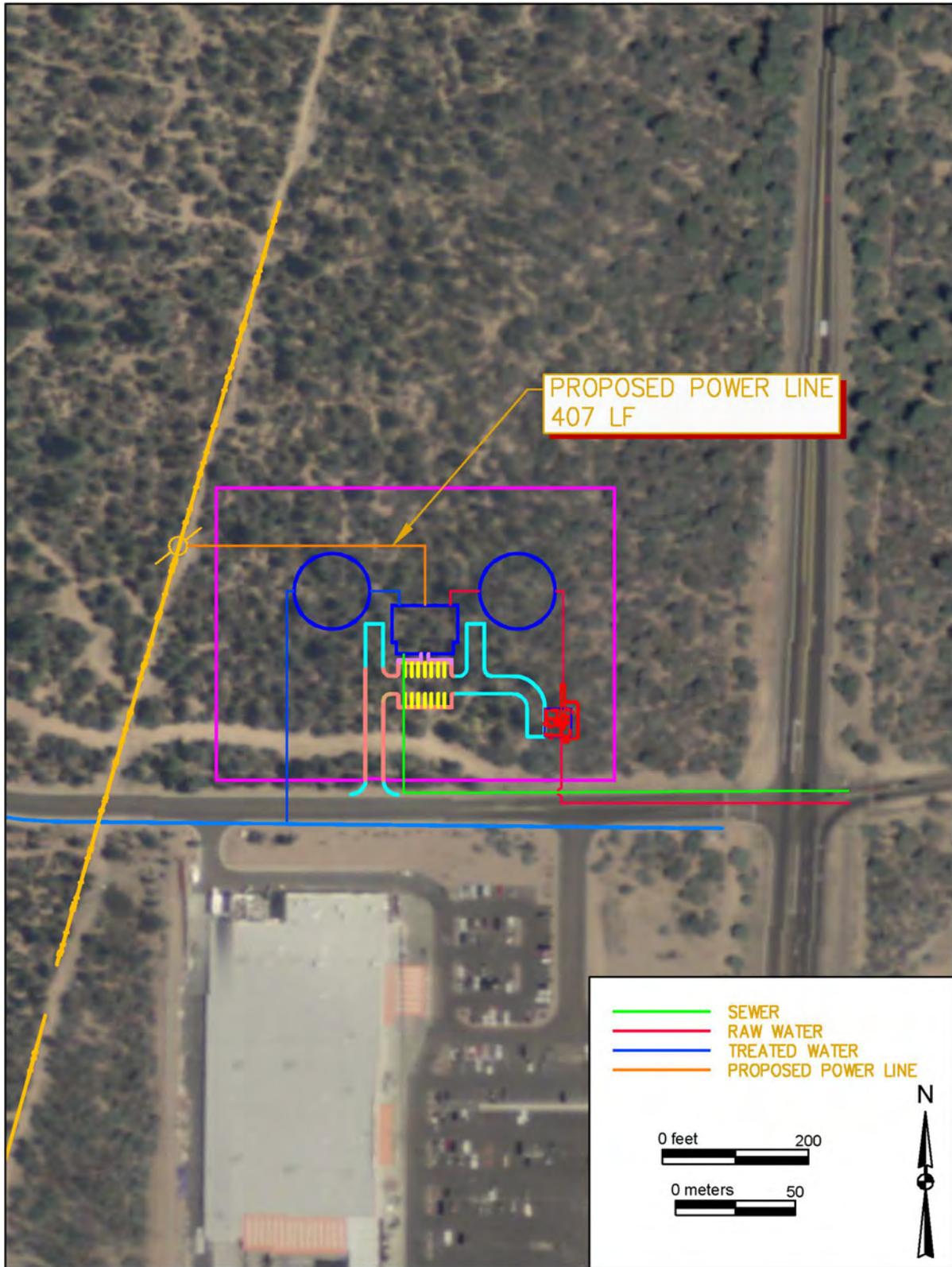
21 There is an existing 21-kV three-phase power connection directly adjacent to the site. A 400-foot-long  
22 WTP power line would be needed from the WTP5 site west to an existing power pole, across Forest  
23 Service lands (see Figure 2.11). As with the additional raw water line above, much of the proposed WTP  
24 power line would be located within the WTP facility footprint.

25 Approximately 800 feet of new sewer line across Forest Service lands would be required to connect the  
26 WTP to the existing NGCSD sanitary sewer system (see Figure 2.11). The new sewer line would extend  
27 south to the Houston Mesa Road and east along the north side of Houston Mesa Road to the point of  
28 connection with the Town's existing sewer line.

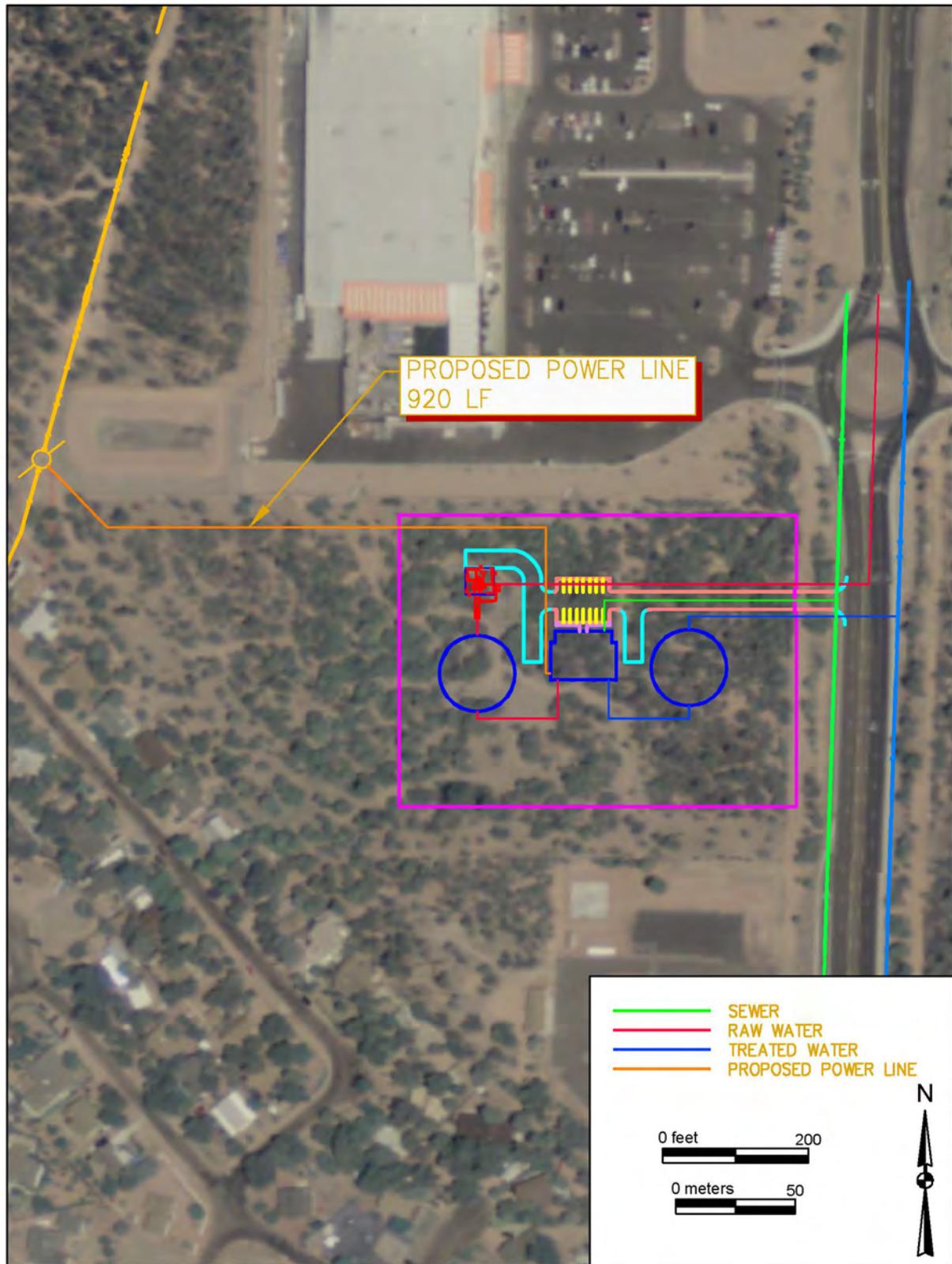
29 Because WTP5 is located on Forest Service lands, selection of Alternative WTP5 would require  
30 authorization of purchase of the site under the National Forest Townsite Act.

## 31 **Alternative WTP6 – 1900 North Beeline Highway**

32 Alternative WTP6 would be located within the Town, at 1900 North Beeline Highway, south of the Home  
33 Depot. The site would be placed on 5 acres of privately owned land in Section 27, Township 11 North,  
34 Range 10 East (USGS Payson North, Arizona, 7.5-minute quadrangle) (Figure 2.12). The site is generally  
35 undisturbed but has been cleared of some vegetation. Access to the site would be via SR 87 (the Beeline  
36 Highway).  
37



1  
2 **Figure 2.11.** Layout of Alternative WTP5, including power, sewer, and raw and treated water.  
3



1  
2  
3

**Figure 2.12.** Layout of Alternative WTP6, including power, sewer, and raw and treated water.

1 The existing topography of the site is slightly undulating (site slope averages 3.8%) and, in general, is  
2 below the grade of the adjacent SR 87 and adjoining properties but could be leveled by bringing in fill.  
3 The site is not situated at an elevation that would allow for the flow of water into the Town's water  
4 system pressure zones via gravity feed; therefore, pumps would be required. However, elevation at the  
5 site would provide the needed elevation change to enable on-site hydroelectric power generation.

6 An additional 2,500 feet of treated water pipeline would need to be added to the selected pipeline  
7 alternative to connect WTP6 to the Town's existing infrastructure. The additional raw water pipeline  
8 would traverse private lands, exiting on the east side of the WTP facility, connecting to the pipeline to the  
9 north, near the entrance to the Home Depot parking lot (see Figure 2.12).

10 There is an existing 21-kV three-phase power connection directly adjacent to, and west of, the site.  
11 The WTP power line would stretch 920 feet across private land to an existing power pole located west  
12 of Home Depot (see Figure 2.12).

13 Access to a sewer system would require a 361-foot sewer line to tie in to the Town's wastewater system.  
14 Much of the line would be located within the WTP boundary. The sewer line would connect to the  
15 existing NGCSD system along the west side of Beeline Highway (see Figure 2.12).

16 Because WTP6 is located on private land, the Town would need to negotiate purchase or lease of the site  
17 from the current landowner; selection of Alternative WTP6–1900 North Beeline Highway would not  
18 encumber Forest Service lands through a National Forest Townsite Act purchase.

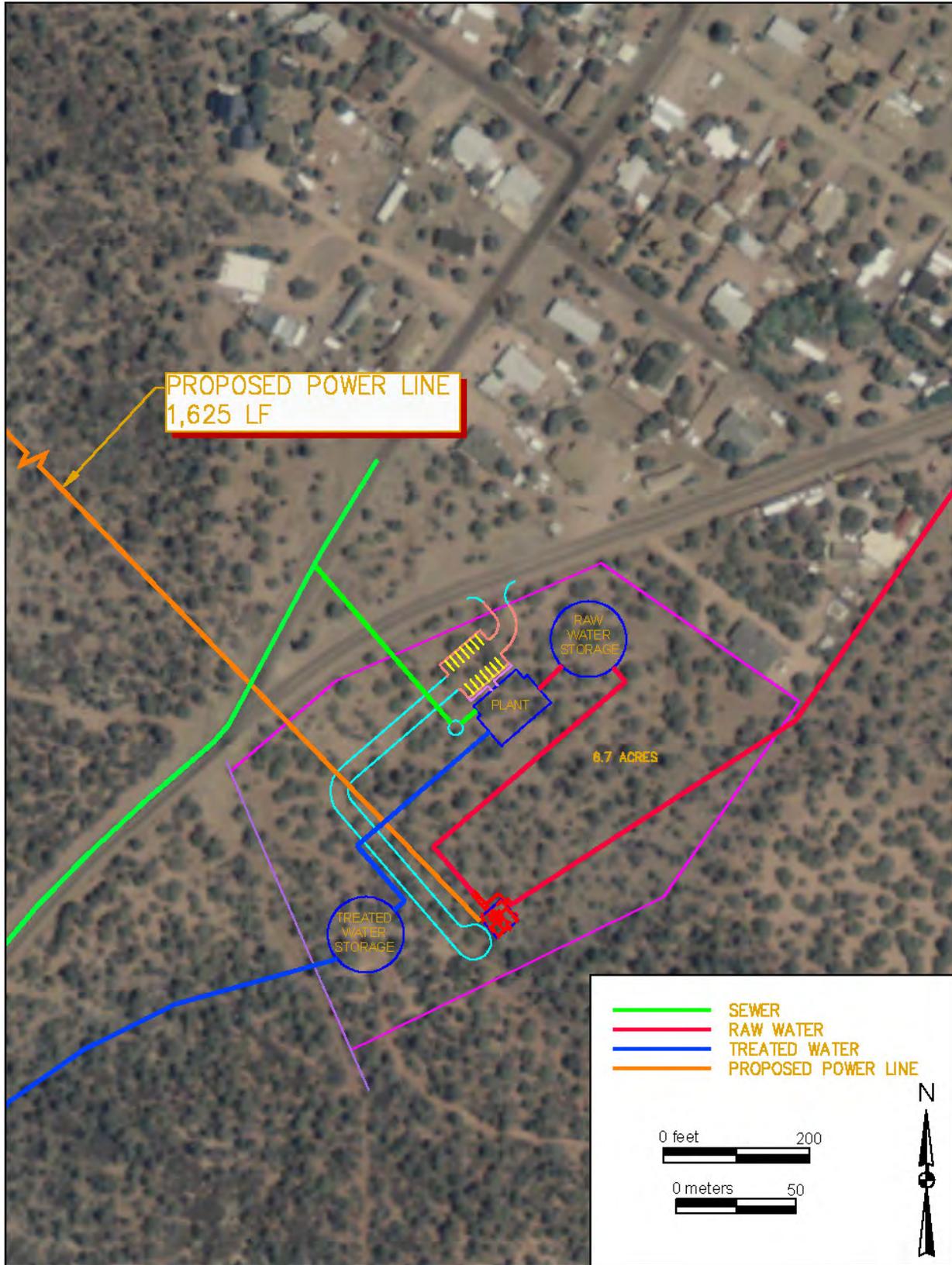
## 19 **Alternative WTP7 – Proposed Action**

20 As previously discussed, Alternative WTP7 – Proposed Action is a WTP alternative proposed by a  
21 member of the public during the public comment period on the draft EA. Alternative WTP7 would be  
22 located along the east side of West Houston Mesa Road, and south of the Mesa del Caballo subdivision.  
23 The site would be on approximately 7 acres of land managed by the Forest Service in Section 23,  
24 Township 12 North, Range 10 East (USGS Payson North, Arizona, 7.5-minute quadrangle) (Figure 2.13).  
25 As with Alternatives WTP1, WTP2, and WTP3, Alternative WTP7 would be located approximately 3  
26 miles from the town of Payson limits and accessible via paved road (West Houston Mesa Road).

27 The site is relatively undisturbed and slopes gently from southwest to northeast (site slope averages  
28 3.2%). The WTP7 site is vegetated. As with WTP1, WTP2, and WTP3, the site would be situated at an  
29 elevation that would allow for the flow of water into the Town's water system pressure zones via gravity  
30 feed. Elevation of the site would also allow for on-site hydroelectric power generation; however, access to  
31 an electrical transmission supply system would be required to power the facility. The location of WTP7  
32 would not require access via low-water crossings.

33 The WTP7 site is located approximately 1,650 feet southeast of an existing 21-kV three-phase power  
34 system that has adequate transmission capacity for operational use of WTP. A new WTP power line  
35 would be constructed from the WTP across West Houston Mesa Road, to the existing power pole  
36 (see Figure 2.13).

37 The location of WTP7 would require realignment of approximately 1,220 feet of Pipeline Alternative 2;  
38 this includes 530 feet of raw water pipeline entering the WTP7 site from the north, and 690 feet of treated  
39 water pipeline exiting the WTP7 site heading south (see Figure 2.13). On Figure 2.5, this is called the  
40 "WTP7 pipeline."  
41



1  
2 **Figure 2.13.** Layout of Alternative WTP7, including power, sewer, and raw and treated water.

1 Additionally, WTP7 would require a 200-foot-long sewer line extension on Forest Service lands. Much  
2 of the proposed sewer line would be located within the proposed WTP facility footprint, exiting the west  
3 side of the proposed WTP to Houston Mesa Road, connecting northwest of the WTP (see Figure 2.13).

4 Because WTP7 is located on NFS lands, selection of Alternative WTP7 would require authorization,  
5 under a decision separate from this EA, of purchase of the site under the National Forest Townsite Act.

## 6 **MITIGATION MEASURES**

7 The following mitigation measures and BMPs would be included as part of the all action alternatives  
8 (both water pipeline and WTP alternatives):

- 9 1. Noxious weed spread prevention: prior to entering or leaving the project area, all earth-moving  
10 and hauling equipment will be cleaned of all plant parts and soil to help prevent the spread of  
11 noxious weeds.
- 12 2. Seeding: all disturbed soils will be seeded with native species. Seed lots to be used in  
13 revegetation will be tested at a state laboratory for the presence of TNF noxious weed species'  
14 seed before the lots are mixed. Seeding shall be implemented on all finished slopes as they are  
15 completed.
- 16 3. Water use: water would be used throughout the construction period from one of three sources, or  
17 a combination of the three sources, as necessary, to reduce fugitive dust and particulate matter.  
18 Daily water needs would depend on ambient conditions and activities that require abatement.  
19 The three potential sources are the allocated 3,000 af of C.C. Cragin Reservoir water, reclaimed  
20 water from the NGCSD, and/or private wells located in the residential areas along the project  
21 alignment.
- 22 4. Equipment emissions: all equipment used for the Proposed Action will meet all applicable  
23 emissions standards.
- 24 5. Heritage resources: archaeological sites will be avoided at all times; if avoidance is not possible  
25 (i.e., the site is in the project footprint and cannot be avoided because of engineering constraints),  
26 under Section 106 of the NHPA, the site will be mitigated to Secretary of the Interior and Forest  
27 Service standards prior to construction, as appropriate.
- 28 6. Staging areas will avoid cultural resources. If cultural resources have been identified during the  
29 preconstruction survey, the site(s) will be avoided within the staging area and/or the staging area  
30 will not be used.
- 31 7. For any infrastructure tie-ins, if Reclamation and the Forest Service deem it necessary an  
32 archaeological survey of the tie-in footprint (including project segments on private land) will be  
33 conducted prior to construction.
- 34 8. Archaeological sites will be avoided at all times. An archaeological monitor may be present to  
35 ensure sites are avoided during construction.
- 36 9. If avoidance is not possible (i.e., the site is in the project footprint and cannot be avoided because  
37 of engineering constraints), in accordance with Section 106 of the NHPA, the site will be  
38 mitigated to Secretary of the Interior and Forest Service standards prior to construction, as  
39 appropriate.
- 40 10. During pipeline construction, an archaeologist will monitor all ground disturbance with the  
41 potential to disturb buried cultural resources within 100 feet of a known archaeological site.

- 1 11. In the areas where the pipeline is located, ground disturbance consists of the pipeline trench only;  
2 according to the current engineering plans, no facilities other than the pipeline would be installed  
3 near the affected sites.
- 4 12. The pipeline is to be buried at least 5 feet deep and no more than 15 feet deep (Forest Service  
5 2011). In the area around AR-03-12-04-1414, the archaeologist will ensure that any phone trees  
6 near the proposed pipeline remain undisturbed.
- 7 13. Archaeological site locations will be flagged to identify avoidance areas, as needed.
- 8 14. Construction crews will not park vehicles or other equipment within flagged site boundaries.
- 9 15. The archaeologist will monitor pipeline trench excavation until sterile soil is reached.  
10 The backdirt will be inspected for artifacts during excavation.
- 11 16. If features are encountered within the pipeline trench, the archaeologist will contact the Forest  
12 Service archaeologist immediately.
- 13 17. Construction work in the area of the discovery will cease until the Forest Service archaeologist  
14 can assess the significance of the discovery.
- 15 18. All features encountered during trenching will be thoroughly recorded by the archaeological  
16 monitor.
- 17 19. Clearing limits: limits of clearing shall be made irregular by varying the width of the area to be  
18 cleared or by leaving selected clumps of vegetation near the edge of the clearing limit.
- 19 20. Slope rounding: slope rounding shall occur at the intersection of cuts and natural grades to blend  
20 two surface edges for a natural-appearing transition.
- 21 21. Slope roughening: all cut-and-fill slopes will be roughened by tilling or ripping 12 inches deep  
22 parallel to the contour.
- 23 22. Vegetation: vegetation outside the specified clearing limits will be preserved and protected.  
24 Vegetation inside the specified clearing limits, if of merchantable value, will be purchased from  
25 the Forest Service.
- 26 23. Paint: all culverts that are visible to the public will be painted with a color that matches the native  
27 soil.
- 28 24. All materials and building finishes will blend in with the surrounding natural landscape.
- 29 25. All water storage tanks will be painted a color that matches the surrounding natural landscape.
- 30 26. Erosion control: temporary and permanent erosion control measures will be incorporated.
- 31 27. After use, staging areas will be obliterated and put back into as near natural conditions as  
32 possible. Obliteration will include roughening, recontouring, and seeding.
- 33 28. Fencing surrounding the WTP will have a dull metal or dark green or brown finish.
- 34 29. Prior to construction, surveys for noxious weeds will be completed. The Forest Service will  
35 coordinate with the Town and the contractor regarding the best manner of treatment.
- 36 30. Mexican Spotted Owl (MSO): Construction activities would be conducted outside the MSO  
37 breeding season (March 1 through August 31) in MSO habitat, north of Wonder Valley.
- 38 31. Chiricahua leopard frog (CLF): Construction activities would be conducted outside CLF  
39 monsoon dispersal period (July 1 through September 30) in CLF dispersal habitat from Pieper  
40 Springs, north of 3rd crossing campground.  
41

- 1 32. During construction of the East Verde River Crossings, the protection of fish species will be  
2 accomplished by:
- 3 ○ Maintaining flow through or around the river crossing during construction.
  - 4 ○ Performing the construction during a period of low flows.
  - 5 ○ The method of construction proposed and materials proposed have low sedimentation  
6 potential.
  - 7 ○ The use of BMP's to reduce the sedimentation in the river due to construction activities.
- 8 33. The following mitigation measures will be utilized to minimize effects to the East Verde River  
9 during construction:
- 10 ○ Contractor shall follow BMPs to reduce sedimentation and prevent spills (oil, gas, etc.)  
11 from entering the flow of the East Verde River during construction activities.
  - 12 ○ The method being proposed maintains flow within the river.
  - 13 ○ Sandbags are being used to create the diversion and will not cause excessive  
14 sedimentation when placed or removed.
  - 15 ○ The construction will take place during low flow conditions reducing the sediment  
16 transport capabilities of the river.
- 17 34. Noxious weed spread prevention: Prior to entering or leaving the project area, all earth-moving  
18 and hauling equipment will be cleaned of all plant parts and soil to help prevent the spread of  
19 noxious weeds.
- 20 35. Seeding: All disturbed soils will be seeded with native species. Seed lots to be used in  
21 revegetation will be tested at a state laboratory for the presence of TNF noxious weed species'  
22 seed before the lots are mixed. Seeding shall be implemented on all finished slopes as they are  
23 completed.
- 24 36. Water use: Water would be used throughout the construction period 1 from one of three sources,  
25 or a combination of the three sources, as necessary, to reduce fugitive dust and particulate matter.  
26 Daily water needs would depend on ambient conditions and activities that require abatement. The  
27 three potential sources are the allocated 3,000 af of C.C. Cragin Reservoir water, reclaimed water  
28 from the NGCSD, and/or private wells located in the residential areas along the project  
29 alignment.
- 30 37. Erosion control: Temporary and permanent erosion control measures will be incorporated.  
31 Erosion, including runoff, of excavated material would be managed under a SWPPP and an  
32 AZPDES permit. Coverage under AZPDES may be obtained either through issuance of an  
33 Individual Permit, or under one of the five General Permits issued by ADEQ. As a part of the  
34 AZPDES permit, a SWPPP is required to be developed that identifies areas of stormwater  
35 discharge and the BMPs that will be used to prevent pollutants from entering the stormwater.  
36 General requirements of the AZPDES permit include additional details and are located in  
37 Appendix A of the BA.
- 38 38. Clearing limits: Limits of clearing shall be made irregular by varying the width of the area to be  
39 cleared or by leaving selected clumps of vegetation near the edge of the clearing limit.
- 40 39. Slope rounding: Slope rounding shall occur at the intersection of cuts and natural grades to blend  
41 two surface edges for a natural-appearing transition.
- 42 40. Slope roughening: All cut and fill slopes will be roughened by tilling or ripping 12 inches deep  
43 parallel to the contour.
- 44 41. Vegetation: Vegetation outside the specified clearing limits will be preserved and protected.  
45 Vegetation inside the specified clearing limits, if of merchantable value, will be purchased from  
46 the Forest Service.

- 1 42. Reclamation: After use, staging areas will be obliterated and put back into as near natural  
2 conditions as possible. Obliteration will include roughening, recontouring, and seeding.
- 3 43. Access and travel management: traffic control measures shall be communicated to the public,  
4 local officials, and the media prior to and during construction activities.
- 5 44. Access and travel management: construction notice to residents and businesses in the project area  
6 shall be provided at least two weeks prior to construction.
- 7 45. Access and travel management: advance warning signs shall be placed at locations designated by  
8 the Forest Service to notify motorists and pedestrians of construction-related delays.
- 9 46. Fuels/fire and public safety: local emergency services (hospital, fire, and police) shall be notified  
10 of any traffic control measures at least two weeks in advance so that alternate travel routes can be  
11 arranged (if needed).
- 12 47. Noise: notice to residents and businesses in the project area shall be provided at least two weeks  
13 prior to construction involving blasting.

## 14 **SUMMARY OF ALTERNATIVES – LAND OWNERSHIP**

15 Tables 2.1 shows land ownership, length in miles, and acreage by alternative for the pipeline. The land  
16 ownership of the WTP alternatives is shown in Table 2.2. Gila County holds rights to an easement on  
17 Houston Mesa Road, but the land is owned by TNF.

18 **Table 2.1.** Pipeline Alternatives – Land Ownership

Alternative	Land Ownership	Length of Alternative (miles)	Acreage of Alternative
No-Action	N/A	N/A	N/A
Alternative 1	Forest Service	14.38	349.11
Alternative 2	Forest Service, private	14.15	343.60
Alternative 3	Forest Service	14.37	348.54

19 **Table 2.2.** Water Treatment Plant Alternatives – Land Ownership

Alternative	Land Ownership
No-Action	N/A
WTP1	Forest Service–owned land would require the Town to pursue authorization of National Forest Townsite Act purchase
WTP2	Forest Service–owned land would require the Town to pursue authorization of National Forest Townsite Act purchase
WTP3	Forest Service–owned land would require the Town to pursue authorization of National Forest Townsite Act purchase
WTP4	Forest Service–owned land would require the Town to pursue authorization of National Forest Townsite Act purchase
WTP5	Forest Service–owned land would require the Town to pursue authorization of National Forest Townsite Act purchase
WTP6	Private land, no Townsite Act purchase required
WTP7	Forest Service–owned land would require the Town to pursue authorization of National Forest Townsite Act purchase

1 Existing wells that may be designated and permitted as ASR wells would only include wells on land  
2 owned by the Town; no privately owned or NFS lands would be used for ASR.

### 3 **ALTERNATIVES CONSIDERED BUT ELIMINATED FROM** 4 **DETAILED STUDY**

5 Several alternatives were considered for the water pipeline and the WTP during the NEPA planning  
6 process but have been eliminated from detailed study and are not analyzed in this EA. These alternatives,  
7 when considered with the project purpose and need, including implementation abilities of engineering,  
8 financing, jurisdictional issues, and other factors, are not considered a reasonable alternative to the  
9 Proposed Action.

### 10 **Transmission Line Alignment**

11 The alternative of locating the water pipeline along an existing power transmission line that traverses the  
12 TNF, well east of Houston Mesa Road, was eliminated from further analysis. This is because of rugged  
13 topography, limited construction access, and the increase in overall pipeline length that would be required  
14 to transport the water from the tailrace to the Town.

15 The existing utility corridor that contains the transmission line would not provide for needed staging  
16 areas. The existing conditions, apart from the transmission line and related vegetation clearing, are  
17 relatively undisturbed; construction of the pipeline would result in large amounts of surface disturbance  
18 if the transmission line route were selected.

### 19 **East Verde River Flow**

20 The alternative of releasing the Town's and northern Gila County's 3,500 af of water into the East Verde  
21 River at the existing tailrace, letting the water flow down the river to a location closer to Payson, and then  
22 pumping the water out of the river bed was eliminated from detailed study. This option was eliminated for  
23 several reasons. First, because of the potential for stormwater and sediment to decrease the water quality,  
24 the WTP would not be able to handle this fluctuation. Also, security issues related to the water being in an  
25 open river bed could allow for contamination risks that would not be present in a confined pipeline.  
26 Further, managing the potential sedimentation and contamination risks would require periodic  
27 interruptions in the delivery of water to the Town.

28 Finally, this alternative does not meet the project purpose and need. Releasing the 3,500 af of water into  
29 the East Verde River would preclude future use of the water by Houston Mesa Road communities.  
30 Releasing Cragin Reservoir water into the river downstream would result in a lack of infrastructure  
31 (pipeline) for these communities to tap into in the future.

### 32 **Stub-outs along Pipeline**

33 The alternative of identifying locations for "stub-outs," or pipeline connections for Houston Mesa Road  
34 communities, along the pipeline was eliminated from detailed study.

35 The Proposed Action (Alternative 1, described below) involves constructing a water pipeline that would  
36 have capacity for 3,500 af; however, an alternative that describes and evaluates the effects of the potential  
37 future connections was dismissed. Because legal water rights have yet to be negotiated for communities  
38 other than the Town, this alternative is too speculative to consider in detail. Future users and/or

1 communities must first individually negotiate a water right to gain access to a portion of the 500 af  
2 available to northern Gila County communities. Once a legal water right with SRP and a permit from  
3 ADWR have been secured, future users and/or communities can then negotiate with the Town to gain  
4 access to the transmission capacity of the Town's proposed pipeline. Construction, operation, and  
5 maintenance of any future connections to the proposed pipeline would require a separate special use  
6 permit from the Forest Service and would be analyzed under a separate analysis.

## 7 **Fire Hydrants**

8 The option of installing fire hydrants along the water pipeline was raised during public scoping. This  
9 alternative was eliminated because this option does not fulfill the project purpose and need of enabling the  
10 delivery of C.C. Cragin Reservoir water to the Town (see Purpose and Need, above).

11 As with the Stub-outs along Pipeline alternative above, a legal water right with SRP and a permit from  
12 ADWR would need to be secured for hydrant users. Because legal water rights have yet to be negotiated  
13 for communities or users other than the Town, this alternative is too speculative to consider in detail.

14 Additionally, there are potential engineering constraints related to the pipeline water pressure. Fire  
15 hydrants are typically designed to function with 50 to 90 psi. As previously discussed, the average  
16 pressure in the Cragin pipeline would be roughly 200 psi, with maximum psi reaching as much as 400 psi  
17 at the lowest points in the line. These pressure differences would prevent a simple "on/off" fire hydrant  
18 from functioning properly and could result in unsafe conditions if installed. The pipeline would not  
19 be compatible with maximum hydrant pressure requirements, unless modifications were made to the  
20 pipeline, or to fire hydrants, to handle the pressure differences. Further, the addition of unsecured  
21 (not fenced or otherwise protected) aboveground features, such as fire hydrants along the line, presents  
22 a source of additional operation and maintenance support (vandalism, water theft, etc.) requirements for  
23 the Town.

## 24 **Aero Drive WTP**

25 The option of locating the WTP in downtown Payson (204 West Aero Drive) was eliminated because of  
26 the available acreage present at this site. A WTP site for this project must be at least 5 acres to  
27 accommodate needed facilities. The Aero Drive site is only 2.75 acres; therefore, it has been eliminated as  
28 a potential alternative WTP location.

## 29 **FINDINGS AND DISCLOSURES**

30 Following is a summary of how the Proposed Action addresses the 10 significant factors identified in  
31 40 CFR 1508.27(b). The findings and disclosures would also be documented in the Decision Notice that  
32 would record the Forest Supervisor's decision and rationale if the Proposed Action or an action  
33 alternative were selected for implementation.

- 34 1. **Impacts may be both beneficial and adverse.** The purpose and need is to enable the Town to  
35 deliver up to 3,500 af of C.C. Cragin Reservoir surface water across portions of the TNF that  
36 would allow the location, construction, and operation of an underground pipeline. The proposed  
37 action alternatives would accomplish this goal, if approved by the Forest Service. There would be  
38 short-term adverse impacts (traffic, recreation, air quality, socioeconomics, and soil disturbance).  
39 Long-term impacts would include the WTP location and the socioeconomic benefits for the  
40 Town. Short-term, long-term, and cumulative impacts would not have a significant effect on the  
41 human environment.

- 1           2. **Degree to which the actions affect public health or safety.** Construction of the water pipeline  
2           would have short-term impacts to traffic on Houston Mesa Road. These impacts include  
3           inconveniences from temporary traffic delays, increased construction traffic, and fugitive dust.  
4           Traffic delays along a rural route can generate a concern by some local residents regarding the  
5           safety of themselves and their property. All traffic control measures and construction activities  
6           that take place would adhere to all Gila County, Town, and Forest Service applicable laws,  
7           regulations, and policies.
- 8           3. **Unique characteristics of the geographic area.** The project area is located south of the  
9           Mogollon Rim and includes part of the East Verde River, one of the few permanent sources  
10          of surface water in the area. These attributes attracted early settlers and were focal points for  
11          prehistoric occupants.  
12          The proposed action alternatives would not adversely impact any historical or prehistoric  
13          archaeological sites if required mitigation measures are implemented. All laws and regulations  
14          pertaining to surveying and protecting historical, prehistoric, and ethnohistoric sites would be  
15          adhered to during all phases of treatment implementation.  
16          There are no known prime farmlands, wetlands, or ecologically critical areas within or  
17          immediately adjacent to the proposed project area.
- 18          4. **Degree to which the effects on the human environment are likely to be highly controversial.**  
19          Public response was highly positive and supportive to purpose and need of the project identified  
20          in Chapter 1. These responses came from 1) collaborative meetings, discussions, and responses  
21          from cooperating agencies; 2) direct mailings of the scoping letter and Proposed Action; 3) a  
22          public “Open House” meeting; 4) newspaper articles in communities within and adjacent to  
23          the project area; and 5) public review of the draft EA. The draft EA (released to the public in  
24          February 2011) included an Alternative WTP (WTP2) that was developed after public scoping,  
25          which was highly controversial based on its proximate location to Mesa del Caballo and Shoofly  
26          Ruins. Subsequent changes in project design have alleviated the controversy WTP2 presented  
27          (quality of life and property value concerns).
- 28          5. **Degree to which the possible effects on the human environment are highly uncertain or  
29          involve unique or unknown risks.** The project proposes the location, construction, and operation  
30          of a 3,500-af capacity underground pipeline, as described in Chapters 1 and 2. The Forest Service  
31          has been involved in numerous pipeline projects throughout the TNF. Surface water conveyance  
32          via pipeline is a common water transmission method used throughout Arizona, therefore there is a  
33          high degree of certainty regarding project impacts.
- 34          6. **Degree to which the action may establish a precedent for future actions with significant  
35          effects or represents a decision in principle about a future condition.** The proposed action  
36          would make 500 af of C.C. Cragin Reservoir water available to the northern Gila County  
37          communities. If communities pursue and construct future water pipeline connections, a separate  
38          future action and decision would be required. As this current project has no significant effects,  
39          these potential future actions would themselves represent minor to moderate effects.
- 40          7. **Whether the action is related to other actions with individually insignificant but  
41          cumulatively significant impacts.** Specialists identified no significant adverse cumulative  
42          impacts in evaluating effects of the proposed action alternatives. No additional actions were  
43          identified that when combined with the proposed action alternatives would cause significant  
44          cumulative impacts.
- 45          8. **Degree to which the action may adversely affect districts, sites, highways, structures, or  
46          objects listed in or eligible for listing in the National Register of Historic Places (NRHP),  
47          or may cause loss or destruction of significant scientific, cultural, or historic resources.** Past  
48          archaeological surveys and investigations have been limited and confined to small areas scattered

1 around the project area. Known use of the area goes back to 10,000 to 12,000 years ago with  
2 more recent habitation occurring mostly between A.D. 900 and 1300. There are no recorded sites  
3 within the project area currently listed on the NRHP; however, the majority of known and  
4 potential sites are considered eligible for inclusion on the NRHP for management purposes.  
5 The Proposed Action would have no effect on any historical, prehistoric, or ethnohistoric sites  
6 with implementation of mitigation measures identified.

- 7 9. **Degree to which the action may adversely affect an endangered or threatened species or**  
8 **its habitat that has been determined to be critical under the ESA of 1973.** The biological  
9 assessment and evaluation identified two threatened or endangered species that are known to  
10 occur or whose habitat may occur in the project area: Chiricahua leopard frog and Mexican  
11 spotted owl. Suitable habitat for Chiricahua leopard frog is present. Critical habitat has been  
12 designated for the Mexican spotted owl.

13 It is expected that the Proposed Action is not likely to adversely affect the Chiricahua leopard  
14 frog or their habitat or Mexican spotted owl. Any effects would be minimal and considered  
15 acceptable. There would be no effects to designated Mexican spotted owl critical habitat. Section  
16 7 of the ESA consultation with the USFWS was conducted on October 11, 2011.

17 Implementation of the Proposed Action would not jeopardize the continued existence of any  
18 listed or proposed species, nor would it result in adverse modification to any critical habitat.

- 19 10. **Whether the action threatens a violation of federal, state, or local law or other requirements**  
20 **imposed for protection of the environment.** No actions are proposed that would threaten a  
21 violation of federal, state, or local law or other requirements imposed for protection of the  
22 environment. They are consistent with management requirements identified in the National Forest  
23 Management Act (1976), 30 CFR 219.17, and the Forest Plan (1985) and all of its amendments.

## Chapter 3

# ENVIRONMENTAL CONSEQUENCES

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## INTRODUCTION

This chapter describes the existing conditions of the project area and discusses how existing conditions may be affected by each of the alternatives under consideration. The area of analysis includes the footprint of all action alternatives (pipeline and WTP alternatives and staging areas), generally located north of the town of Payson along existing FR 32B, FR 32 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa Road), and West Houston Mesa Road on the west side of SR 87 (see Figures 1.1 and 2.1–2.5). Specific locations have not yet been identified for the infrastructure tie-ins needed for the following: to transport potable water from the WTP to the existing water distribution system; to transport potable water to the ASR wells; and to transport waste discharged from the WTP to the sewer line connecting to the NGCSD WWTP. The location of these facilities cannot be determined until a final WTP site has been chosen and the ASR wells have been designated. These tie-ins would consist of buried pipelines and would be located within existing Town easements if located on NFS land, or they would be on private land. The impacts from construction and operation of these components are programmatically addressed in this document under each resource.

The affected environment (or existing conditions) is the scientific and analytical basis for comparing alternatives, as presented in Chapter 2. The current conditions and any known trends are described to provide readers with a basis for assessing the consequences of the alternatives; the resources and potential impacts discussed in the following sections are related to the significant issues that were identified during public and agency scoping.

All environmental impacts that may occur as a result of each alternative, including direct, indirect, and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are included. Resource indicators are discussed in Chapter 1 (see Issues and Indicators). The means by which potential adverse effects would be reduced or mitigated are described in Mitigation Measures (see Chapter 2). Appendix A provides a list of past, present, and reasonably foreseeable future actions that have been taken into consideration in developing the cumulative effects analysis for each resource.

Potential impacts are described in terms of type, context, duration, and intensity. Definitions are defined as follows.

- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
  - *Beneficial*: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
  - *Adverse*: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
  - *Direct*: An effect that is caused by an action and occurs at the same time and place.
  - *Indirect*: An effect that is caused by an action but occurs later in time or is farther removed in distance, but is still reasonably foreseeable.
- **Context** describes the area or location in which the impact would occur. Are the effects site-specific, local, regional, or even broader?

- 1       • **Duration** describes the length of time an effect would occur, either short-term or long-term:
  - 2           ◦ *Short-term* impacts generally last only during construction, and the resources resume
  - 3           their pre-construction conditions following construction.
  - 4           ◦ *Long-term* impacts last beyond the construction period, and the resources may not
  - 5           recover to their pre-construction conditions for a longer period of time following
  - 6           construction.
- 7       • **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has
- 8       been categorized into negligible, minor, moderate, and major.

9       Impacts are considered minor if project-related impacts would occur, but resources would retain existing  
10      character and overall baseline conditions. Impacts are considered moderate if project-related impacts  
11      would occur, and resources would partially retain existing character. Some baseline conditions would  
12      remain unchanged. Finally, project-related impacts would occur that would create a high degree of change  
13      within the existing resource character and overall condition of resources.

14     In general, impacts are discussed temporally in terms of how the project will be executed, which is 1) the  
15     construction of the pipeline and WTP; 2) the operation of the pipeline and WTP; and 3) any maintenance  
16     of the pipeline and WTP, in that order.

17     The following section is organized by resource. Within each section, the affected environment is briefly  
18     described, followed by the anticipated environmental consequences (impacts) of implementing each  
19     alternative.

## 20     **ACCESS AND TRAVEL MANAGEMENT**

### 21     **Affected Environment**

22     The project area begins at the tailrace south of the Mogollon Rim, near Washington Park. The project  
23     corridor traverses south for roughly 12 miles of FR 32B, FR 32 (Washington Park Road), FR 64 (Control  
24     Road), FR 199 (Houston Mesa Road), and West Houston Mesa Road north of Payson. Roads along the  
25     project route are paved or mechanically graded and maintained and average approximately 25 feet wide.

26     FR 32B, FR 32 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa Road), and West  
27     Houston Mesa Road provide access to the in-holding communities of Whispering Pines, Wonder Valley,  
28     Rim Trail Estates, Verde Glen, Beaver Valley Estates, Freedom Acres, and Mesa del Caballo. This road  
29     network also provides access to businesses, designated recreation sites, and a number of other area roads  
30     and trails outside the project area.

31     Forest service roads FR 32B and FR 32 are Maintenance Level (ML) 3 roads; FR 64 and FR 199 are ML  
32     4 roads. Under current Forest Service management, these are the operational and objective MLs for these  
33     project area roads. TNF roads FR 32B, FR 32, and FR 64 are unpaved. TNF FR 199 is paved. ML 3 roads  
34     are generally low-speed, single-lane roads with turnouts that have low to moderate traffic volume and  
35     provide for passenger car travel. ML 4 roads are generally low to moderate speed, may be double lanes,  
36     have moderate traffic volume, and provide for passenger car travel (Forest Service 2005a).

# 1 Environmental Consequences

## 2 **No-Action Alternative**

3 Under the No-Action Alternative, access and travel management would remain in its current state.  
4 There would be no direct, indirect, or cumulative effects on access and travel management.

## 5 **Pipeline Alternatives**

### 6 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

7 Construction of Alternative 1, as described in the action alternatives, would require a short-term  
8 modification of the road bed in areas where the pipeline would either cross under the existing road or be  
9 placed beneath the road bed itself. The modifications to all road beds included in Alternative 1 would  
10 not result in changes to the existing MLs. No modifications to roadways would be required for the  
11 construction staging areas. The current uses of the staging areas, if any, would be precluded during  
12 construction.

13 Since one-way travel would be maintained during construction and, where feasible, two-way traffic  
14 would be maintained at reduced speeds, depending on the locations, the impacts to access for residents of  
15 Whispering Pines, Wonder Valley, Rim Trail Estates, Verde Glen, Beaver Valley Estates, Freedom  
16 Acres, and Mesa del Caballo and TNF users would be short term. Although unanticipated, any full  
17 roadway closures would occur during predetermined nighttime hours, which would greatly reduce the  
18 impacts to access for residents and TNF users. Construction activities would require vehicle users  
19 traveling along the project to maintain a low speed, which would be compatible with the requirements of  
20 ML 3 roads. For the ML 4 roads in the project area, the required decrease in speed during construction  
21 would not result in a change in ML since low speeds are included in the management objectives of ML  
22 4 roads. No construction activities would exclude the use passenger vehicles on FR 32B, FR 32  
23 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa Road), and West Houston  
24 Mesa Road (Belluzzi Boulevard).

25 Access for emergency vehicles and Forest Service personnel during construction would be maintained  
26 by keeping the roadway open at least one way at all times. If imminent emergency conditions are  
27 encountered and require rapid deployment of personnel (e.g., forest fire or medical emergencies), access  
28 would also be maintained by keeping the roadway open at least one way at all times. If necessary,  
29 construction would be halted and the road immediately restored to a satisfactory temporary condition in  
30 order to allow unrestricted access of emergency personnel and vehicles. Therefore, Alternative 1 would  
31 have a local, minor, short-term, adverse impact to access and travel management. BMPs and FHWA-  
32 mandated traffic controls would minimize impacts to accessing private lands.

33 Operation and maintenance of Alternative 1 would not result in any direct or indirect impacts to access or  
34 travel management.

35 Past, present and reasonably foreseeable future actions that have influenced access and travel  
36 management include roadway construction and maintenance and residential and recreational  
37 development. The incremental effects of Alternative 1, combined with these past actions, would not  
38 equate to a major cumulative effect since Alternative 1 would only create short-term changes to access  
39 and would not result in changes to the MLs of the existing roadways.

## 1 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

2 Alternative 2 would have the same impacts to access and travel management as Alternative 1, in addition  
3 to those described below.

4 The first difference in this alternative's alignment would be located near the tailrace, at the northern  
5 terminus of the pipeline. Since the pipeline would not be located in the FR 32B road bed, access to the  
6 SRP pump station would remain in its current state and the ML would be unchanged. Alternative 2 would  
7 exit the tailrace and travel approximately 100 feet along the East Verde River. The Alternative 2  
8 alignment would then turn to the northwest, paralleling the SRP powerhouse for approximately 2,000  
9 feet. The alignment then turns south for approximately 1,000 feet to Harvest Lane. Finally, the  
10 Alternative 2 alignment would follow Harvest Lane to Box Elder Lane, and would travel approximately  
11 750 feet to Belluzzi Boulevard, resulting in an overall reduction in impacts to travel management from  
12 Alternative 1, since less of the FR 32B road bed would be subject to construction activities. Alternative 2  
13 avoids the residential corridor of Rim Trail, but would require construction near the entrance to Rim Trail.  
14 Access to these privately owned properties would be adversely impacted during the period in which  
15 construction activities would be taking place on this alignment because of the presence of construction  
16 equipment, trenching, and temporary lane closures.

17 The second alignment difference included in Alternative 2 would be located just west of Whispering  
18 Pines. As with the tailrace portion of this Alternative alignment described above, this alignment would  
19 leave the existing road bed for approximately 2,250 feet, resulting in an overall reduction in impacts to  
20 travel management from Alternative 1 since less of the road bed would require construction activities.  
21 This alignment would not impact public or administrative access since the alignment would occupy  
22 undeveloped TNF land. During construction, Alternative 2 would result in fewer impacts to access and  
23 travel management than Alternative 1 since it avoids the Whispering Pines roadway corridor.

24 The third alignment difference included in Alternative 2 would be located north and south of the proposed  
25 WTP7 location, just south of the Mesa del Caballo community on the south side of Houston Mesa Road.  
26 The Alternative 2 pipeline alignment would depart south of the Houston Mesa Road road bed  
27 approximately 1 mile south of the Shoofly Ruins site. The pipeline would travel south through  
28 undeveloped TNF land for approximately 1,000 feet before penetrating the southern corner of WTP7.  
29 The Alternative 2 pipeline alignment would then exit the southwest corner of WTP7 and travel across  
30 undeveloped TNF land for approximately 2,300 feet before rejoining the Houston Mesa Road road bed.  
31 Construction impacts to access and travel management from this Alternative 2 alignment would be less  
32 than Alternative 1, since the pipeline alignment would cross undeveloped TNF land rather than the  
33 Houston Mesa Road road bed.

34 Operation and maintenance of Alternative 2 would not result in any direct or indirect impacts to access or  
35 travel management, since the Alternative 2 pipeline alignment has been located outside of the Box Elder  
36 Lane constricted residential corridor, and since BMPs and FHWA-mandated traffic controls would  
37 minimize impacts to accessing private lands. Similarly, the ML of the roads included in Alternative 2  
38 would remain at existing MLs during operation and maintenance.

39 Cumulative impacts of Alternative 2 would be the same as described for Alternative 1.

## 40 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

41 Alternative 3 would have the same impacts to access and travel management as Alternative 1, in addition  
42 to those described below.

1 As described in Chapter 2, Alternative 3 would leave the road bed to avoid the Second and Third  
2 crossings of the East Verde River. This would reduce the impacts to travel management during  
3 construction since less of the road would require modification under this alternative, compared with the  
4 other action alternatives. Alternative 3 would not impact public or administrative access since the  
5 alignment would occupy undeveloped TNF land.

6 Once construction is complete, TNF users may be tempted to explore the newly improved road bed that  
7 would follow the alignment; this would create potential unwanted access to the TNF and result in long-  
8 term impacts to the travel management. Mitigation such as a locked gate and signage indicating the route  
9 is closed for use would decrease the likelihood of unwanted access.

10 Cumulative impacts of Alternative 3 would be the same as described for Alternative 1.

## 11 **Water Treatment Plant Alternatives**

### 12 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

13 Construction of Alternative WTP1 has the potential to result in temporary access restrictions and  
14 short-term increases in traffic delays in the project area from ground-disturbing activities as well as  
15 construction vehicle traffic. The impact to access and travel management during construction of WTP1  
16 would only occur at the WTP1 site. Electric transmission lines required for WTP1 operation would not  
17 result in changes to access or maintenance levels. Operation and maintenance of WTP1 would not result in  
18 changes to MLs of the roadways included in the project. Thus, local, minor, short-term, adverse effects on  
19 access and travel management would result during construction. No other direct or indirect impacts are  
20 anticipated.

21 Cumulative impacts resulting from Alternative WTP1 would be the same as those described above under  
22 pipeline alternatives: present and future use and maintenance of project area roads could cumulatively  
23 increase traffic delays and temporarily restrict access.

### 24 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

25 Alternative WTP2 would have the same direct, indirect, and cumulative effects on access and travel  
26 management as described under Alternative WTP1.

### 27 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

28 Alternative WTP3 would be located in area that currently provides access to an un-named jeep trail which  
29 has historically been, and is currently being, used to access livestock range improvements and a range  
30 monitoring area. If Alternative WTP3 were implemented, it would eliminate this access point and result  
31 in adverse, direct, and long-term impacts to access and travel management.

### 32 **ALTERNATIVE WTP4 – TAILRACE SITE**

33 Alternative WTP4 would have the same direct, indirect, and cumulative effects on access and travel  
34 management as described under Alternative WTP1, in addition to the following.

35 There would be a long-term nominal increase in traffic from the trucks that would be required to haul  
36 stored waste discharge if the WTP4 site is chosen. The increase in traffic would result from the  
37 approximately two 36-mile round-trips per month that would occur as a result of transporting by truck  
38 the stored waste discharge from the WTP4 to the NGCSD WWTP.

## 1 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

2 Alternative WTP5 would have the same direct, indirect, and cumulative effects on access and travel  
3 management as described under Alternative WTP1.

## 4 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

5 Alternative WTP6 would have the same direct, indirect, and cumulative effects on access and travel  
6 management as described under Alternative WTP1.

## 7 **ALTERNATIVE WTP7 – PROPOSED ACTION**

8 The impacts to access and travel management under Alternative WTP7 would be similar as described  
9 under Alternative WTP1, except the following difference. Alternative WTP7 would result in decreased  
10 impacts to access and travel management compared to the other action alternatives, owing to the WTP7  
11 associated pipeline's alignment departing Houston Mesa Road. This would result in fewer traffic  
12 restrictions since construction activities would be located off the road bed within undeveloped TNF land.

## 13 ***Infrastructure Tie-Ins***

14 Impacts to access and travel management during construction of these tie-ins, where the tie-in location  
15 crosses or falls within an existing road, would be similar to those described for the pipeline alternatives;  
16 however, the duration of construction is expected to be much shorter than for the pipeline. No road  
17 closures are anticipated to be needed. Operation of Alternative WTP4 would include two round trips by  
18 truck monthly to haul waste discharge from the WTP to the NGCSD WWTP.

## 19 ***Mitigation***

- 20 • Traffic control measures shall be communicated with the public, local officials, and the media  
21 prior to and during construction activities.
- 22 • Construction notice to residents and businesses in the project area shall be provided at least two  
23 weeks prior to construction.
- 24 • Advance warning signs shall be placed at locations designated by TNF to notify motorists and  
25 pedestrians of construction-related delays.
- 26 • The displaced jeep trail that provides access to range improvements that would be eliminated if  
27 WTP3 were constructed would be relocated around WTP3 in order to continue to provide access  
28 to the range improvements.

## 29 **AIR QUALITY**

### 30 **Affected Environment**

31 The EPA designates communities that do not meet National Ambient Air Quality Standards (NAAQS),  
32 over a period of time, as non-attainment areas. States are then required to develop a plan to control source  
33 emissions and ensure future attainment of the standards.

34 The Town is not located in a federally mandated non-attainment area, as defined by the NAAQS. Payson  
35 was redesignated an attainment area with a maintenance plan on August 26, 2002 (EPA 2008). Roads

1 have been paved to maintain air quality levels to meet EPA standards and to decrease the amount of dust  
2 and particulate matter smaller than 10 microns in diameter (PM<sub>10</sub>) pollution. Therefore the project is  
3 located in a maintenance area for PM<sub>10</sub> air pollution. The ADEQ conducts air quality monitoring in  
4 Payson; however, the TNF does not conduct air quality monitoring in the project vicinity.

5 Since 1985, Payson has reduced PM<sub>10</sub> concentrations threefold. Since 1991, Payson has reduced emission  
6 of fine particulates significantly, as well, from 17.9 micrograms per cubic meter (µg/m<sup>3</sup>) in 1991 to 10  
7 µg/m<sup>3</sup> in 2002 (ADEQ 2002). The past exceedances in emissions recorded in the Payson area were the  
8 result of primary PM<sub>10</sub> emissions associated with paved and unpaved roads, wood smoke, and industrial  
9 sources (ADEQ 2002).

10 The Clean Air Act also provides for additional measures “to preserve, protect, and enhance the air  
11 quality” in larger National Parks, Wilderness Areas, and other areas of special national significance;  
12 these areas are designated Class I airsheds. The nearest Class I airsheds are the Mazatzal Wilderness  
13 (approximately 9 miles west) and the Hellsgate Wilderness (approximately 8 miles south).

14 The ADEQ Air Quality Division provides rules for reducing dust during construction, demolition, and  
15 earth-moving activities in the Arizona Administrative Code R18-2-604 through -607 and Arizona  
16 Administrative Code R18-2-804 (see mitigation measures below).

## 17 **Environmental Consequences**

### 18 ***No-Action Alternative***

19 Under the No-Action Alternative, no construction activities would take place, and there would be no  
20 change in fugitive dust emissions or current NAAQS conditions in terms of air quality. There would be  
21 no additional air pollutant emissions as a result of the No-Action Alternative. Thus, no direct or indirect  
22 effects on air quality are expected under this alternative. The No-Action Alternative would not add to the  
23 cumulative effects on air quality.

24 Cumulatively, the emissions from prescribed fire may be considered contributing impacts to air quality.  
25 The Matatzal and Hellsgate Wilderness Class I airsheds have been adversely affected by smoke impacts  
26 generated by past high-intensity wildfires, including the Willow (2004), Cave Creek Complex (2005), and  
27 Edge Complex (2005) fires. Historically, prescribed burning on the Payson and Pleasant Valley Ranger  
28 Districts has occurred on about 3,000 acres annually.

### 29 ***Pipeline Alternatives***

#### 30 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

31 Construction of the pipeline has the potential to result in short-term increases in fugitive dust and  
32 particulate matter in the project area from ground-disturbing activities, as well as construction vehicle  
33 traffic. Operation and maintenance of the pipeline are not expected to result in ground disturbance or  
34 increases in traffic; thus, no changes in air quality are expected as a result of operation of the pipeline.  
35 Thus, minor, short-term, adverse effects on local air quality would result during construction. No other  
36 direct or indirect effects are anticipated. There would be no impact to Class I airsheds since the short-term  
37 increases in dust and particulate matter would be required to travel at least 8 miles to the south or 9 miles  
38 to the north to reach the nearest Class I airshed.

39 Air quality regulations, pursuant to 40 CFR Parts 51 and 93, require a ‘Conformity Determination’ for all  
40 federal actions that may cause or contribute to a violation of NAAQS or that may interfere with the

1 purpose of a relevant State Implementation Plan, Tribal Implementation Plan, or local air quality plan.  
2 The Payson Attainment Area Maintenance Plan does not specifically address water pipeline and treatment  
3 plant construction and operation. However, the reasonably available control measures that apply to road  
4 construction and parking lot paving described in the Payson Attainment Area Maintenance Plan would be  
5 implemented for this project to ensure that impacts to NAAQS would not occur.

6 Present and future use and maintenance (grading) of project area roads (FR 32B, FR 32 [Washington Park  
7 Road], FR 64 [Control Road], FR 199 [Houston Mesa Road], and West Houston Mesa Road) could  
8 cumulatively increase fugitive dust and particulate matter. These roads are used by residents accessing  
9 communities in the study area and recreationists accessing area destinations. Thus, cumulatively, minor,  
10 long-term, adverse effects on local air quality could result. However, these impacts would not result in  
11 measurable changes over current conditions. The emissions from prescribed fire may be considered  
12 contributing impacts to air quality. The Matatzal and Hellsgate Wilderness Class I airsheds have been  
13 adversely affected by smoke impacts generated by past high-intensity wildfires, including the Willow  
14 (2004), Cave Creek Complex (2005), and Edge Complex (2005) fires. Historically, prescribed burning on  
15 the Payson and Pleasant Valley Ranger Districts has occurred on about 3,000 acres annually.

## 16 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

17 Alternative 2 would have the same direct, indirect, and cumulative effects on air quality as Alternative 1.

## 18 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

19 Alternative 3 would have the same direct, indirect, and cumulative effects on air quality as Alternative 1.

## 20 ***Water Treatment Plant Alternatives***

### 21 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

22 As with the impacts described above to pipeline alternatives, construction of Alternative WTP1 has the  
23 potential to result in short-term increases in fugitive dust and particulate matter in the project area from  
24 ground-disturbing activities, as well as construction vehicle traffic. Operation and maintenance of the  
25 WTP are not expected to result in changes in air quality. Thus, minor, short-term, adverse effects on local  
26 air quality would result during construction. No other direct or indirect effects are anticipated.

27 Cumulative impacts resulting from Alternative WTP1 would be similar to those described above under  
28 pipeline alternatives: present and future use and maintenance of project area roads could cumulatively  
29 increase fugitive dust and particulate matter. Thus, cumulatively, minor, long-term, adverse effects on  
30 local air quality could result. However, these impacts would not result in measurable changes over current  
31 conditions.

### 32 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

33 Alternative WTP2 would have the same direct, indirect, and cumulative effects on air quality as  
34 Alternative WTP1.

### 35 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

36 Alternative WTP3 would have the same direct, indirect, and cumulative effects on air quality as  
37 Alternative WTP1.

**1 ALTERNATIVE WTP4 – TAILRACE SITE**

2 Alternative WTP4 would have the same direct, indirect, and cumulative effects on air quality as  
3 Alternative WTP1.

**4 Alternative WTP5 – 2100 NORTH BEELINE HIGHWAY**

5 Alternative WTP5 would have the same direct, indirect, and cumulative effects on air quality as  
6 Alternative WTP1.

**7 ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

8 Alternative WTP6 would have the same direct, indirect, and cumulative effects on air quality as  
9 Alternative WTP1.

**10 ALTERNATIVE WTP7 – PROPOSED ACTION**

11 Alternative WTP7 would have the same direct, indirect, and cumulative effects on air quality as  
12 Alternative WTP1.

**13 Infrastructure Tie-Ins**

14 It is anticipated construction of any new pipelines needed for infrastructure tie-ins would result in  
15 nominal amounts of air emissions in addition to those that would be created by construction of the WTP.  
16 It is likely that construction of these tie-ins would occur after construction of the pipeline and WTP has  
17 been completed. These nominal emissions would be localized and would not be expected to adversely  
18 impact the regional air shed because of the following: the existing air quality of the general vicinity is not  
19 impaired; there would be only a nominal amount of air pollutant emissions generated during construction  
20 of the tie-ins, which would be further reduced by BMPs and dust suppression measures; and there is a  
21 high likelihood that construction activities of the various components of the proposed project would not  
22 occur simultaneously.

23 There would be a long-term nominal increase in air pollution from truck emissions if the WTP4 site is  
24 chosen. These emissions would result from the approximately two 36-mile round-trips per month that  
25 would occur as a result of transporting by truck the stored waste discharge from the WTP to the NGCSD  
26 WWTP.

**27 Mitigation**

- 28 • Water use: water would be used throughout the construction period from one of three sources,  
29 as necessary, to reduce fugitive dust and particulate matter. Daily water needs would depend on  
30 ambient conditions and activities that require abatement. The three potential sources would be the  
31 allocated 3,000 af of C.C. Cragin Reservoir water, reclaimed water from the NGCSD, or private  
32 wells located in the residential areas along the project alignment.
- 33 • Site Preparation and Construction: Minimize land disturbance; suppress dust on traveled paths  
34 which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other  
35 reasonable precautions to prevent dust entering ambient air; cover trucks when hauling soil;  
36 minimize soil track-out by washing or cleaning truck wheels before leaving construction site;  
37 stabilize the surface of soil piles; and create windbreaks.
- 38 • Site Restoration: Revegetate any disturbed land not used; remove unused material; and remove  
39 soil piles via covered trucks.

- Equipment emissions: all equipment used during construction and operation would meet all applicable emissions standards.

## CLIMATE CHANGE

### Affected Environment

Ecosystems are regulated by climate, and climate is to some degree determined by ecosystems. Climate change, specifically increasing temperatures and atmospheric carbon dioxide (CO<sub>2</sub>) levels, in addition to changes in levels of precipitation and the frequency and severity of extreme climatic events, can have notable impacts on the world's forests and forest health. Similarly, the spread of invasive weeds or invasive insects, wildfire occurrences, forest thinning projects, grazing, and other human activities that modify the vegetation landscape can result in impacts on climate change.

The health of the ecosystem is a function of water availability, temperature, CO<sub>2</sub>, and many other factors. If vegetation cover and moisture exchanging properties of the land change, important local and regional climate characteristics such as humidity, wind, and temperature will also change. These changes have the potential to compound effects on vegetation. Climate change may cause a host of physical consequences to the ecosystems, which may in turn affect the quality of plant and animal habitat. This may occur through a decrease in available water, changes in vegetation cover, changes in vegetation type through severe drought or fire, or changes in hydrology.

Forests play a major role in the carbon cycle. The carbon stored in live biomass, dead plant material, and soil represents the balance between CO<sub>2</sub> absorbed from the atmosphere and its release through respiration, decomposition, and burning. Over longer time periods, indeed as long as forests exist, they will continue to absorb CO<sub>2</sub>.

Two types of climate change effects are considered here: 1) the effect of a proposed project on climate change (greenhouse gas [GHG] emissions and carbon cycling); and 2) the effect of climate change on a proposed project.

### Environmental Consequences

#### *No-Action Alternative*

Under the No-Action Alternative, no construction activities would take place, and there would be no change in vegetation cover, GHG emissions, or the carbon cycle beyond current conditions. Thus, no direct, indirect, or cumulative effects on climate change are expected under this alternative.

#### *Pipeline Alternatives*

#### **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

In terms of the effect of a proposed project on climate change, construction of the proposed pipeline would include some vegetation thinning and the operation of construction equipment and vehicles. As construction equipment is operated, it produces GHG emissions through the combustion of gasoline and diesel fuels. Additionally, short-term disturbance to vegetation and soil during construction can have an impact on the local carbon cycle. No operational GHG emissions or impacts to the carbon cycle are anticipated. Thus, construction of the proposed pipeline would emit GHG in the short term (a direct

1 effect) but not measurably contribute to the global concentration of GHGs that affect climate in the short  
2 term (an indirect effect). In terms of the effect of climate change on the proposed pipeline, no  
3 construction or operational impacts are anticipated.

4 Thus, direct and indirect impacts to climate change would be negligible, short term, local, and adverse.

5 As an individual project, the proposed pipeline is unlikely to have a measurable impact on climate change  
6 or to be impacted by climate change. The potential for climate change impacts is best considered in the  
7 context of past, present, and future actions (see Appendix A). As with Air Quality, present and future use  
8 and maintenance (grading) of project area roads (FR 32B, FR 32 [Washington Park Road], FR 64  
9 [Control Road], FR 199 [Houston Mesa Road], and West Houston Mesa Road) could cumulatively affect  
10 GHG emissions. The proposed project's gaseous exhaust emissions (including GHGs) would add  
11 cumulatively to pollutants emitted from other natural and human-caused sources into the atmosphere.  
12 The relatively minute quantities of pollutants released during construction, and afterwards from operation  
13 of the WTP and ASR wells, would have a negligible cumulative effect on local air quality or global  
14 processes that lead to climate change. Thus, cumulatively, negligible, long-term, local, adverse effects on  
15 climate change could result. However these impacts would not result in measurable changes over current  
16 conditions.

## 17 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

18 Alternative 2 would have the same direct, indirect, and cumulative effects on climate change as  
19 Alternative 1.

## 20 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

21 Alternative 3 would have the same direct, indirect, and cumulative effects on climate change as  
22 Alternative 1.

## 23 ***Water Treatment Plant Alternatives***

### 24 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

25 In terms of the effect of a proposed project on climate change, construction of Alternative WTP1 would  
26 include complete blading of the site, as well as the operation of construction equipment and vehicles.  
27 Additionally, long-term disturbance to vegetation and soil during construction could have an impact on  
28 the local carbon cycle. No operational GHG emissions or impacts to the carbon cycle are anticipated.  
29 In terms of the effect of climate change on the proposed WTP, no construction or operational impacts are  
30 anticipated.

31 Thus, Alternative WTP1 would have the same direct, indirect, and cumulative effects on climate change  
32 as Pipeline Alternative 1.

### 33 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

34 Alternative WTP2 would have the same direct, indirect, and cumulative effects on climate change as  
35 Pipeline Alternative 1.

### 36 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

37 Alternative WTP3 would have the same direct, indirect, and cumulative effects on climate change as  
38 Pipeline Alternative 1.

## 1 **ALTERNATIVE WTP4 – TAILRACE SITE**

2 Alternative WTP4 would have the same direct, indirect, and cumulative effects on climate change as  
3 Pipeline Alternative 1, except that hydroelectric power generation would not be included under WTP4  
4 because of the lack of elevational drop between the pipeline inlet and WTP4 location. Although not  
5 measurable on a regional scale, WTP4 would result in slightly greater electrical power consumption.

## 6 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

7 Alternative WTP5 would have the same direct, indirect, and cumulative effects on climate change as  
8 Pipeline Alternative 1.

## 9 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

10 Alternative WTP6 would have the same direct, indirect, and cumulative effects on climate change as  
11 Pipeline Alternative 1.

## 12 **ALTERNATIVE WTP7 – PROPOSED ACTION**

13 Alternative WTP7 would have the same direct, indirect, and cumulative effects on climate change as  
14 Pipeline Alternative 1.

## 15 ***Infrastructure Tie-Ins***

16 Construction of any new pipelines needed for infrastructure tie-ins would produce nominal amounts of  
17 GHG emissions as a result of vehicular and equipment gasoline and diesel fuel combustion. As with  
18 construction-related activities described for the pipeline and WTP, the contractor would be required to  
19 ensure that all combustion-related construction equipment is in good working order and meets all  
20 emission standards. Locating the WTP at the WTP4 site would result in increased truck traffic—about  
21 two trips per month (36 miles round trip)—that would occur as a result of transporting by truck the stored  
22 waste discharge from the WTP to the NGCSD WWTP.

## 23 ***Mitigation***

- 24 • Equipment emissions: all equipment used during construction and operation would meet all  
25 applicable emissions standards.

## 26 **FUELS/FIRE AND PUBLIC SAFETY**

### 27 **Affected Environment**

28 Fire has been an important ecosystem process in the Mogollon Rim for thousands of years. Before  
29 settlement and under the jurisdiction of the federal government, forest fires were generally frequent  
30 throughout much of the range. The frequency and severity of these fires varied spatially and temporally,  
31 depending on climate, elevation, topography, vegetation, and human activity. Fire has influenced the  
32 dynamics of nearly all ecological processes. Reduction in the influence of fire in these ecosystems  
33 because of fire suppression in the twentieth century has had widespread (although not yet completely  
34 understood) effects. Lacking fire, the thinning that has occurred has been the result of competition  
35 (primarily water and light), disease, and insect attack. The result has been a large increase in the amount  
36 and continuity of live forest fuels near the forest floor that provide a link between the surface fuels and

1 upper canopy layers. The lack of fire has allowed dead fuels to accumulate in excess of their pre-  
2 settlement levels.

3 Some current and past management actions have contributed to forest conditions that encourage high-  
4 severity fires. The policy of excluding all fires has been successful in generally eliminating fires of low  
5 to moderate severity as a significant ecological process. However, current technology is not capable of  
6 eliminating high-severity fires. Thus, fires that affect significant portions of the landscape and that once  
7 varied considerably in severity are now almost exclusively large, high-severity, stand-replacing fires.  
8 In addition, the southwestern United States is experiencing both a long-term drought (lasting 10–15  
9 years), as well as localized, more severe, short-term droughts (ADWR 2004). The result of historic forest  
10 management policies of fire suppression and widespread drought conditions has spawned the largest  
11 forest fires in state history. Recent examples of this include Rodeo-Chedeski in 2002 (468,638 acres),  
12 Willow in 2004 (119,500 acres), Creek Complex in 2005 (248,310 acres), Water Wheel in 2009  
13 (500 acres), and Wallow in 2011 (538,049 acres).

14 The Water Wheel fire occurred along the project route near the Whispering Pines subdivision and the  
15 Water Wheel day-use area/campground. The burned area affected watershed conditions, as runoff into the  
16 East Verde increased dramatically after area vegetation burned. The day-use area has been reopened to  
17 the public since the Water Wheel fire.

18 Public safety along the general Houston Mesa Road/FR-199 corridor is managed by the Town, Gila  
19 County, and TNF. Public safety concerns include domestic and residential safety in the surrounding  
20 communities, vehicle and off-highway vehicle safety, and the risks associated with travel into rural and  
21 undeveloped areas far from emergency services. Safety concerns at industrial facilities, such as the  
22 existing SRP generating station located adjacent to the tailrace, include wastewater spills, electronic  
23 equipment, and the risks associated with high-pressure (psi) facilities.

## 24 **Environmental Consequences**

### 25 ***No-Action Alternative***

26 Under the No-Action Alternative, the risk of fire and associated fuels would remain unchanged from  
27 current conditions. There would be no direct, indirect, or cumulative effects.

### 28 ***Pipeline Alternatives***

#### 29 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

30 Under Alternative 1, the risk of fire and associated fuels would remain unchanged. The ability for fire  
31 service vehicles and personnel and emergency and public safety vehicles to access portions of the TNF  
32 would allow wildland fire management and emergency services to continue. Construction is not expected  
33 to result in full closure of the roadway; at least one-lane of travel would be maintained at all times (see  
34 Access and Travel Management). Therefore, Alternative 1 would not result in changes to the abilities of  
35 emergency and fire vehicle access during construction, operation, or maintenance.

36 The water pipeline alignment of Alternative 1 would follow existing roadways for the entire alignment;  
37 these roadways, in their current condition, act as firebreaks. Alternative 1 would not decrease the viability  
38 of FR 32B, FR 32, FR 64, FR 199, or Houston Mesa Road as a fuel breaks during construction, operation,  
39 or maintenance of Alternative 1.

1 Alternative 1 would result in short-term changes to the existing public safety due to the presence of heavy  
2 equipment and construction activities. During operation, public safety would resume the current condition  
3 since Alternative 1 would be buried underground.

4 In terms of cumulative impacts, any increase in outdoor activity, in addition to the creation of permanent  
5 surface developments, would subsequently increase the risk for human-caused fires within the area and  
6 create the potential for cumulative impacts to fuels/fire. Alternative 1 would not include permanent  
7 surface developments that would increase the risk for human-caused fires within the area since it would  
8 be located within a previously disturbed and developed area and would not include any permanent surface  
9 developments (beyond control and pressure valves). However, as recreational activity increases with  
10 population in the region, the risk of human-caused forest fires will increase, as well; however, this would  
11 not depart from current conditions. Therefore, no cumulative impacts to fuels/fire and public safety are  
12 anticipated.

### 13 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

14 Alternative 2 would have the same indirect, direct, and cumulative impacts to fuels/fire and public safety  
15 as Alternative 1, in addition to those described below. BMPs and FHWA-mandated traffic controls would  
16 minimize impacts to accessing private lands for purposes of fire-fighting/management and public safety.

17 Alternative 2 would require construction and operation of the pipeline on undeveloped TNF land in three  
18 areas: at the Tailrace alignment, the Whispering Pines alignment, and the WTP7 alignment. Vegetation  
19 thinning will be required (refer to Chapter 2) to accommodate the pipeline alignment in these areas of  
20 undeveloped TNF land. This vegetation thinning would act as a firebreak, increasing the viability of the  
21 Alternative 2 alignment as a fuel break in the two areas where the pipeline would traverse undeveloped  
22 TNF and/or private land. The vegetation would remain clear of the Alternative 2 in the short term during  
23 construction of the pipeline but would be reclaimed to natural conditions during operation. The associated  
24 access road would remain clear of vegetation in order to allow access. This would constitute a beneficial,  
25 long-term effect on fuels/fire and public safety.

### 26 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

27 Alternative 3 would have the same indirect, direct, and cumulative impacts to fuels/fire and public safety  
28 as Alternative 2, in addition to those described below.

29 Forest fires that may occur along the steep terrain and ‘severe’ TES soil unit erosion hazard rating of  
30 Alternative 3 would increase the likelihood of erosion because of the removal of vegetation and forest  
31 floor litter.

32 Alternative 3 would bypass the Second and Third crossings of the East Verde River. This would reduce  
33 the risk to public safety and emergency access and response since the risk of high-water crossings would  
34 not be further complicated by the presence of construction activities and potential lane closures.

### 35 ***Water Treatment Plant Alternatives***

#### 36 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

37 Construction of Alternative WTP1 has the potential to result in changes to the risk of fuels/fire. Although  
38 access would be restricted during construction, construction of WTP1 would not result in changes to  
39 emergency and fire vehicle access and response. Electric transmission lines required for WTP1 operation  
40 would result in changes to fuel wood since vegetation thinning would be required beneath the  
41 transmission lines, reducing the fuel load. Operation and maintenance of WTP1 would not result in

1 indirect, direct, or cumulative effects on public safety. Thus, minor, short-term, beneficial effects on  
2 fuels/fire and public safety would result during construction.

3 Construction of Alternative WTP1 would result in changes to the risk of human health and safety.  
4 The introduction of the treatment facilities to undeveloped Forest has the potential to expose the human  
5 environment to the wastewater concentrates that result from filter cleaning/replacement should the  
6 concentrates spill. In the event of a spill, secondary containment systems of the filters and the building  
7 would prevent any spills from exiting the building. The concentrates would be properly disposed of into  
8 the existing NGCSD sewer system, as applicable. Therefore, the risk to human health and safety from  
9 water pollutants, micro-organisms and other particles resultant from the water filtration  
10 cleaning/replacement would be minor and short-term.

11 Cumulative impacts resulting from Alternative WTP1 would be similar to those described above under  
12 Pipeline Alternatives. Thus, cumulatively, minor, long-term, beneficial effects on fuels/fire and public  
13 safety could result. However, these impacts would not result in measurable changes over current  
14 conditions.

### 15 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

16 Alternative WTP2 would have direct, indirect, and cumulative effects on fuels/fire and public safety.  
17 Although WTP2 would affect 10 acres, construction of WTP1 would not result in changes to emergency  
18 and fire vehicle access and response.

### 19 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

20 Alternative WTP3 would have the same direct, indirect, and cumulative effects on fuels/fire and public  
21 safety as Alternative WTP1.

### 22 **ALTERNATIVE WTP4 – TAILRACE SITE**

23 Alternative WTP4 would have the same direct, indirect, and cumulative effects on fuels/fire and public  
24 safety as Alternative WTP1.

### 25 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

26 Alternative WTP5 would have the same direct, indirect, and cumulative effects on fuels/fire and public  
27 safety as Alternative WTP1.

### 28 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

29 Alternative WTP6 would have the same direct, indirect, and cumulative effects on fuels/fire and public  
30 safety as Alternative WTP1.

### 31 **ALTERNATIVE WTP7 – PROPOSED ACTION**

32 Alternative WTP7 would have the same direct, indirect, and cumulative effects on fuels/fire and public  
33 safety as Alternative WTP1.

### 34 ***Infrastructure Tie-Ins***

35 Construction and presence of infrastructure tie-ins from the WTP to the existing sewer and water  
36 distribution systems would not increase the risk of fire or cause a public safety concern. The tie-in

1 infrastructure would be buried beneath existing roads or road ROWs. Travel access would be maintained  
 2 during installation of these tie-ins in the same manner as described under Pipeline Alternatives.

### 3 **Mitigation**

- 4 • Local emergency services (hospital, fire, and police) shall be notified of any traffic control  
 5 measures at least two weeks in advance so that alternate travel routes, if needed, can be arranged.

## 6 **GEOLOGY AND SOILS**

### 7 **Affected Environment**

8 In geological terms, the project area falls within the Transition Zone or Central Mountain Region of  
 9 Arizona, termed such because this area is a transition between the Colorado Plateau to the north and the  
 10 Basin and Range province to the south. In this part of Arizona, the Transition Zone is defined by the  
 11 Mogollon Rim to the north and the southern extent of the Mazatzal Mountains to the south. Elevations  
 12 range from 4,846 to 5,840 feet above mean sea level (amsl).

13 The town of Payson and the project area are both generally part of a roughly defined plateau that lies  
 14 below the Mogollon Rim, often referred to as the Payson platform or Payson headland. The Payson  
 15 platform is divided into two parts, a higher and a lower part, which are structurally separated by the  
 16 Diamond Rim. Payson and Star Valley lie on the lower part of the platform, which dropped about  
 17 1,000 feet as a result of movement of the Diamond Rim fault in the mid-Tertiary period, approximately  
 18 20 million to 25 million years ago. The geological setting of the study area is dominated by sedimentary  
 19 (Permian and Pennsylvanian, and Mississippian to Cambrian) and granitoid rocks (Early Proterozoic)  
 20 (Arizona Land Resource Information System 2010).

21 Generalized soil series present in the across the project area include Roundtop-Tortugas-Jacks  
 22 Association for roughly 90% of the pipeline route and Soldier-Hogg-McVickers Association (Hendricks  
 23 1986). Roundtop-Tortugas-Jacks Association soils are mesic subhumid and are generally shallow to  
 24 moderately deep, gravelly and cobbly, medium to fine textured, undulating to very steep soils on hills and  
 25 mountains. Soldier-Hogg-McVickers Association soils are frigid humid and are moderately deep and  
 26 deep, fine-textured, gently sloping to steep mountain soils (Hendricks 1986). Soils in the general project  
 27 area are level to strongly sloping (0%–15%) or moderately steep (10%–30%). A few areas are steep  
 28 (20%–60%) (Soil Conservation Service 1993).

29 The TNF's TES for the northern portion of the TNF lists 12 TES mapping units that dominate the project  
 30 area (Forest Service 1985b). Table 3.1 describes the TES Map Units that occur within the project area.

31 **Table 3.1.** Terrestrial Ecosystem Map Units within the Project Area

Map Unit	Soil Condition	Slope (%)	Vegetation	Hydrologic Soil Group*	Erosion Hazard	Alt 1 (acres)	Alt 2 (acres)	Alt 3 (acres)
26	Satisfactory	0–10	Riparian	B	Not Rated	77.1	66.8	58.1
3753	Satisfactory; naturally unstable	40–80	Pinyon-Juniper-Oak	B	Severe	7.6	7.7	5.5
4140	Impaired and unsatisfactory	0–15	Juniper Savanna	C/D	Slight	13.5	13.8	13.8
4170	Impaired and unsatisfactory	0–15	Pinyon-Juniper-Oak	C	Slight	80.3	79.7	79.7

32

1 **Table 3.1.** Terrestrial Ecosystem Map Units within the Project Area\* (Continued)

Map Unit	Soil Condition	Slope (%)	Vegetation	Hydrologic Soil Group*	Erosion Hazard	Alt 1 (acres)	Alt 2 (acres)	Alt 3 (acres)
4175	Satisfactory and impaired	15–40	Pinyon-Juniper-Oak	C	Severe	18.8	19.0	19.0
4176	Satisfactory; naturally unstable	40–80	Chaparral	C	Severe	8.0	6.2	14.0
4240	Impaired and unsatisfactory	0–15	Pinyon-Juniper-Oak	B	Slight	46.0	46.2	46.2
4242	Satisfactory; naturally unstable	40–80	Chaparral	D/B	Severe	0.8	0.5	0.5
4457	Impaired and unsatisfactory	15–40	Pinyon-Juniper-Oak	B/D	Moderate	13.9	14.3	15.6
5250	Satisfactory	0–15	Ponderosa Pine	C	Slight	4.8	9.8	4.9
5251	Satisfactory	15–40	Ponderosa Pine	C	Severe	60.7	60.2	72.4
5252	Satisfactory	40–80	Ponderosa Pine	C	Severe	0.0	0.2	0.3
5350	Satisfactory	0–15	Ponderosa Pine	B	Moderate	18.0	18.3	18.3
6251	Satisfactory	15–40	Mixed Conifer	C	Severe	0.0	0.7	0.2
<b>Total</b>						<b>350</b>	<b>343.6</b>	<b>348.5</b>

2 Source: Forest Service (2010).

3 Note: TES units of the WTP alternatives are discussed below.

4 \* The hydrologic soil group rates the ability of soil to accept rainfall. Groups range from A (Very low runoff potential) to D (High runoff potential).

5 

## Environmental Consequences

6 Alteration of geological process and features is not proposed in any of the alternatives. However, the  
7 construction of both the pipeline and WTP would require extensive ground disturbance, including  
8 trenching, blasting, and filling of the TES units characterized in Table 3.1, which could impact slope  
9 stability and safety. The intensity of impacts to slope stability and safety will vary in accordance with the  
10 TES unit “Erosion Hazard,” as described in Table 3.1. A rating of slight indicates that all vegetation and  
11 liter can be removed from a soil and that the resultant soil loss will not exceed tolerance soil loss rates.  
12 This does not imply that soil degradation is not occurring. Removal of organic matter source (natural  
13 vegetation) can lead to undesirable changes in soil chemical and physical properties. Areas that fit within  
14 this erosion hazard class generally stabilize under natural conditions. A rating of moderate indicates that  
15 rates of soil loss will result in lowering of site productivity if left unchecked. A rating of severe indicates  
16 that rates of soil loss have a high probability of lowering site productivity before mitigation measures can  
17 be applied (Forest Service 1985b). The soil erosion hazard applies to soils where vegetation and ground  
18 cover have been removed; it does not apply to cut slopes. Cut slopes would be protected through normal  
19 engineering practices for such slope angles.

20 

### No-Action Alternative

21 Under the No-Action Alternative, the pipeline and WTP would not be constructed. The existing  
22 geological and soil conditions would remain in their current condition and would not experience any  
23 direct or indirect effects. However, the potential drainage improvements included in the design and  
24 construction of the proposed pipeline would not occur under this alternative. Over time, without future  
25 action by the Forest Service, erosion along the roadways could increase, resulting in a long-term, adverse  
26 cumulative impact if the No-Action Alternative were implemented.

1 Additional cumulative impacts would occur if traffic increases on the project roadways as a result of the  
2 planned recreation improvements at Water Wheel and the East Verde River crossings, potentially  
3 increasing erosion along the roadways.

## 4 ***Pipeline Alternatives***

### 5 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

6 Alternative 1 would not have any direct, indirect, or cumulative impacts to the geological setting.  
7 The sedimentary (Permian and Pennsylvanian, and Mississippian to Cambrian) and granitoid rocks that  
8 make up the geological setting of Alternative 1 would generally not be impacted because of the depth of  
9 disturbance (averaging 5 feet) during construction, which would mostly disturb topsoil, not rock (the three  
10 East Verde River crossings would be the exception, as noted in Chapter 2).

11 Alternative 1 would not require new surface disturbance to undisturbed lands since it is wholly contained  
12 within the existing roadways.

13 During construction, impacts to soils would be greatest in the TES units identified as having a high  
14 erosion hazard and steep slopes (>40%). Approximately 95.9 acres out of 350 total acres (27.43%) of  
15 Alternative 1 are rated as having ‘severe’ erosion hazards. The impacts to soils would be greatest in these  
16 areas. Approximately 31.9 acres out of 350 total acres (9.14%) of Alternative 1 are rated as having  
17 ‘moderate’ erosion hazards. TES units included in Alternative 1 with erosion hazards rated as ‘slight’  
18 represent the greatest amount of total acreage: 144.6 acres (41.43%). A total of 77.1 acres is not rated.  
19 Impacts to soils would be local, minor, adverse, and short term in these areas. Soil erosion along the  
20 Alternative 1 pipeline alignment would be minimized by a combination of soil stabilization and avoidance  
21 where possible, construction BMPs, and issuance of a SWPPP.

22 In addition to soil disturbance and removal, the TES soil units would also be impacted during  
23 construction as a result of soil compaction. Soil compaction results when the weight of construction  
24 vehicles compresses soils, which could accelerate the rate of surface water drainage along Alternative 1.  
25 Accelerations (slope stability and safety) in surface water drainages could also result in increased erosion  
26 hazards. The direct and indirect impacts to soils would be site specific and moderate but short term.

27 Once construction is complete, improved drainages and reclamation of surface disturbance would  
28 decrease the potential for soil erosion. During operation and maintenance of Alternative 1, rain events  
29 may increase soil erosion, but this impact would not depart from existing conditions.

30 Cumulative impacts to soils would occur when combined with past, present, and reasonably foreseeable  
31 actions that include surface disturbance, such as road construction, residential development, and  
32 range/livestock activities. These actions all require surface disturbance and soil removal, which could  
33 result in increased erosion hazard. This impact would be short-term, localized, and moderate. Site-specific  
34 areas, such as staging areas that currently experience surface disturbance, would have an additive effect to  
35 the surface disturbance anticipated during construction.

### 36 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

37 Alternative 2 would have indirect, direct, and cumulative impacts. The impacts to existing conditions and  
38 TES units are described below.

39 Approximately 94.5 acres out of 343.6 total acres (27.5%) of Alternative 2 are rated as having ‘severe’  
40 erosion hazards. The impacts to soils would be greatest in these areas. Approximately 32.6 acres out of  
41 343.6 total acres (9.49%) of Alternative 2 are rated as having ‘moderate’ erosion hazards. TES units

1 included in Alternative 2 with erosion hazards rated as ‘slight’ represent the greatest amount of total  
2 acreage: 149.5 acres (43.51%). A total of 66.8 acres is not rated. The direct and indirect impacts to soils  
3 would be site specific, minor, and short term in these areas.

4 Alternative 2 would include three areas in which new surface disturbance would be required. The first is  
5 located at the tailrace and Rim Trails along the East Verde River (see Figures 2.4 and 2.5). Construction  
6 of Alternative 2 would require approximately 3,000 feet of new surface disturbance in the area between  
7 the tailrace and the end of the existing Harvest Lane. This new surface disturbance, located in a TES unit  
8 with an erosion hazard of ‘severe,’ would result in a direct impact to soils. During operation and  
9 maintenance of Alternative 2, rain events may increase soil erosion, but this impact would not depart from  
10 existing conditions.

11 The second area in which new surface disturbance would occur under Alternative 2 would be located west  
12 and north of the Whispering Pines residential cluster. Construction of Alternative 2 would require  
13 approximately 2,250 feet of new surface disturbance, resulting in a direct impact to soils. This new  
14 surface disturbance, located in a TES unit with an erosion hazard of ‘severe,’ would result in a direct  
15 impact to soils. During operation and maintenance of Alternative 2, rain events may increase soil erosion,  
16 but this impact would not depart from existing conditions.

17 The third area in which new surface disturbance would occur under Alternative 2 would be located east  
18 and west of the WTP7 location. Construction of Alternative 2 would require approximately 3,300 feet of  
19 new surface disturbance in a TES unit with an erosion hazard of ‘slight’, resulting in a direct impact to  
20 soils. During operation and maintenance of Alternative 2, rain events may increase soil erosion, but this  
21 impact would not depart from existing conditions.

22 Cumulative impacts would be the same as described under Alternative 1.

### 23 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

24 Alternative 3 would have indirect, direct, and cumulative impacts. The impacts to existing conditions and  
25 TES units are described below.

26 Approximately 111.9 acres out of 348.5 total acres (32.57%) of Alternative 3 are rated as having ‘severe’  
27 erosion hazards. The impacts to soils would be greatest in these areas. Approximately 33.9 acres out of  
28 348.5 total acres (9.87%) of Alternative 3 are rated as having ‘moderate’ erosion hazards. TES units  
29 included in Alternative 3 with erosion hazards rated as ‘slight’ represent the greatest amount of total  
30 acreage: 144.6 acres (42.08%). A total of 58.1 acres is not rated. Direct and indirect impacts to soils  
31 would be site specific, minor, and short term in these areas.

32 Alternative 3 would include one area in which new surface disturbance would be required; the area is  
33 located west of the Second and Third crossings of the East Verde River (see Figures 2.4 and 2.5).  
34 Construction of Alternative 3 would require approximately 7,500 feet of new surface disturbance in  
35 undeveloped TNF land. This new surface disturbance, located in a TES unit with an erosion hazard of  
36 ‘severe,’ would result in a direct but short-term impact to soils. During operation and maintenance of  
37 Alternative 3, rain events may increase soil erosion, but this impact would not depart from existing  
38 conditions.

39 Cumulative impacts would be the same as described under Alternative 1.

## 1 **Water Treatment Plant Alternatives**

### 2 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

3 Alternative WTP 1 would not have any direct, indirect, or cumulative impacts to the geological setting.  
4 The sedimentary (Permian and Pennsylvanian, and Mississippian to Cambrian) and granitoid rocks that  
5 make up the geological setting of all WTP alternatives would generally not be impacted because of the  
6 depth of disturbance (averaging 5 feet) during construction, which would mostly disturb topsoil, not rock.

7 As with the impacts described above to Pipeline Alternatives, construction of WTP1, including electric  
8 and sewer line components, has the potential to impact soils. However, soil erosion at the WTP1 site  
9 would be minimized by a combination of soil stabilization and avoidance where possible, construction  
10 BMPs, and issuance of a SWPPP. The surface disturbance required for the construction of WTP1 would  
11 be located in a TES unit with an erosion hazard of ‘slight’ and would result in a 5-acre local, direct, but  
12 short-term impact to soils.

13 Operation and maintenance of WTP1 would not result in indirect or direct effects on soils because no  
14 additional surface disturbance or soil removal would occur after construction.

15 Cumulative impacts resulting from Alternative WTP1 would be similar to those described above under  
16 Pipeline Alternatives. Thus, cumulatively, local, minor, short-term effects on soils could result. However,  
17 these impacts would not result in measurable changes over current conditions.

### 18 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

19 Alternative WTP2 would have direct, indirect, and cumulative effects on soils. WTP2 would be located in  
20 a TES unit with an erosion hazard of ‘slight’ and would result in a 10-acre local, direct, but short-term  
21 impact to soils.

### 22 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

23 Alternative WTP3 would have the same direct, indirect, and cumulative effects on soils as Alternative  
24 WTP1.

### 25 **ALTERNATIVE WTP4 – TAILRACE SITE**

26 Alternative WTP4 would have direct, indirect, and cumulative effects on soils.

27 The surface disturbance required for the construction of WTP4 would be located in a TES unit with an  
28 erosion hazard of ‘severe’ and would result in a 5-acre local, direct, short-term impact to soils.

### 29 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

30 Alternative WTP5 would have direct, indirect, and cumulative effects on soils.

31 The surface disturbance required for the construction of WTP5 would be located in a TES unit with an  
32 erosion hazard of ‘moderate’ and would result in a 5-acre local, direct, short-term impact to soils.

### 33 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

34 Alternative WTP6 would have direct, indirect, and cumulative effects on soils.

1 The surface disturbance required for the construction of WTP6 is not located within a TES unit; the area  
2 is not rated for its erosion hazard. However, impacts to soils would likely be the same as for WTP5  
3 because of the alternatives' close proximity to one another.

#### 4 **ALTERNATIVE WTP7 – PROPOSED ACTION**

5 Alternative WTP7 would have the same direct, indirect, and cumulative effects on soils as Alternative  
6 WTP1.

#### 7 ***Infrastructure Tie-Ins***

8 Construction of infrastructure tie-ins from the WTP to the existing sewer and water distribution systems  
9 would be the same as described for Pipeline Alternative 1. The existing infrastructure is currently buried  
10 at depths similar to those described for Pipeline Alternative 1. It is anticipated that installation of these  
11 tie-ins would be wholly contained within existing roadways and would not require new land surface  
12 disturbance to undisturbed areas of native vegetation.

#### 13 ***Mitigation***

- 14 • Clearing limits: limits of clearing shall be made irregular by varying the width of the area to be  
15 cleared or by leaving selected clumps of vegetation near the edge of the clearing limit.
- 16 • Slope rounding: slope rounding shall occur at the intersection of cuts and natural grades to blend  
17 two surface edges for a natural-appearing transition.
- 18 • Slope roughening: all cut and fill slopes would be roughened by tilling or ripping 12 inches deep.

## 19 **HERITAGE RESOURCES**

### 20 **Affected Environment**

21 The project area has been the subject of numerous cultural resources surveys in the past 30 years. More  
22 recently, the areas of potential effects for Pipeline Alternatives 1, 2, and 3, Alternatives WTP1, WTP2,  
23 WTP3, WTP4, WTP5, WTP6, and WTP7, five staging areas (staging areas 2, 3, 4, 6 and 7), and multiple  
24 geotechnical testing locations have been surveyed for cultural resources (Dosh 2009; Barr 2010;  
25 Tremblay et al. 2011). Two of the seven project staging areas (staging areas 1 and 5) have not been  
26 surveyed for cultural resources because they are located in previously disturbed or developed areas.  
27 Known sites in the project area represent prehistoric and Historic period occupation and use of the area,  
28 summarized below. No traditional cultural properties, native plant gathering areas, or tribal sacred sites  
29 are currently known to be located within the project area; however, no specific efforts to identify and  
30 inventory such resources have been made.

31 Impact discussions in Environmental Consequences, below, are based on known cultural resources in the  
32 project area. Eighteen archaeological sites have been recorded in the overall project area as a result of  
33 prior archaeological studies and studies conducted for the proposed pipeline. Fourteen of these sites are  
34 located within the area surveyed by Northland Research, Inc. (Dosh 2009). Four of the eighteen sites are  
35 located in, or were previously mapped as being located in, areas surveyed by SWCA for this project  
36 (Tremblay et al. 2011).

1 Fifteen of the recorded sites are eligible or are treated as eligible for listing in the National Register of  
 2 Historic Places; three sites are not eligible for listing in the NRHP (Table 3.2). The Forest Service treats  
 3 all sites that have the potential to be eligible for listing in the NRHP as being eligible.

4 **Table 3.2.** Recorded Sites Located along the Proposed Pipeline

FS Site Number	Site Description	NRHP-Eligibility Status*
AR-03-12-04-508	Artifact scatter	Eligible
AR-03-12-04-654	Historical cabins and outbuildings	Eligible
AR-03-12-04-893 AZ O:11:45(ASM)	Artifact scatter	Eligible
AR-03-12-04-902	Artifact scatter	Eligible
AR-03-12-04-1319	Houston Mesa Road	Not eligible
AR-03-12-04-1336	Control Road	Eligible
AR-03-12-04-1393	Artifact scatter	Eligible
AR-03-12-04-1414	Phone trees	Eligible
AR-03-12-04-1478	Rock formation	Eligible
AR-03-12-04-1480	Retaining walls and water wheel	Eligible
AR-03-12-04-1483	Artifact scatter, possible structure	Eligible
AR-03-12-04-1489	Trash scatter	Eligible
AR-03-12-04-1546	Artifact scatter	Eligible
AR-03-12-04-1865	Artifact scatter	Eligible
AR-03-12-04-1867	Artifact scatter	Eligible
AR-03-12-04-1868	Corral	Not eligible
AR-03-12-04-2104	Three cobble structures	Eligible
AR-03-12-04-2105	Bedrock metate	Not eligible

5 \* Sites considered "potentially eligible" by the TNF are listed as Eligible here.

6 One NRHP-listed site, AR-03-12-04-20, is located adjacent to the proposed project area. AR-13-12-04-  
 7 20, the Shoofly Village Ruin, is a prehistoric village with several cobble structures. It is currently in use  
 8 as an educational and interpretive center. Because the Shoofly Village Ruins is listed in the NRHP,  
 9 indirect impacts to AR-03-12-04-20 will be analyzed in this document. In addition, seven sites are located  
 10 adjacent to the project area; however, they are all outside the construction ROW and would not be  
 11 disturbed during construction.

12 The Payson area probably witnessed minimal use by Paleoindian and Early Archaic period (9000–  
 13 4000 B.C.) hunter-gatherers. One Paleoindian campsite has been identified south of Payson (Huckell  
 14 1978), and a few isolated Clovis points have been discovered along the Mogollon Rim north of Payson.  
 15 TNF Archaeologist J. Scott Wood reports that a number of Clovis points fragments have been found  
 16 along the East Verde River, although these are in the possession of private collectors and little is known  
 17 about their provenience or associations (personal communication, J. Scott Wood, Tonto National Forest  
 18 Archaeologist 2007). In general, the evidence suggests limited, almost temporary, use of this area during  
 19 the Paleoindian and Early Archaic periods, probably for hunting forays.

20 By the Middle to Late Archaic period, perhaps sometime around 3000 B.C., use of the Payson area had  
 21 become more frequent. This occupation was most likely seasonal, included hunting and plant gathering  
 22 activities, and is evidenced by numerous dart points and associated flaking stations (occasionally

1 associated with ground stone artifacts) in the oak, pinyon-juniper, and ponderosa pine forests in the  
2 Mogollon Rim escarpment area.

3 Conventional dates for the terminus of the Archaic period fall around A.D. 700. However, chronometric  
4 dates for the end of the Archaic tradition and introduction of agricultural crops into the greater Payson  
5 area are rare. What can be surmised with some confidence is that the early agricultural groups who  
6 inhabited the area, known loosely as the Central Arizona Tradition, probably derived from the Late  
7 Archaic hunter-gatherers. Sometime in the A.D. 700s or 800s, this local population began acquiring  
8 Hohokam decorated ceramics and constructed Hohokam-style pit houses in a manner similar to Central  
9 Arizona Tradition groups throughout an area that extended from Payson to Prescott and from the  
10 Mogollon Rim to the foothills north of the Phoenix Basin. Hohokam migration into the greater Payson  
11 area almost certainly took place, but the nature and scale of the immigration remain debatable. The pit  
12 house settlements of what has been termed the Union Park phase (A.D. 700–1000) were clustered in well-  
13 watered valleys, such as the Green, Little Green, and Star valleys.

14 The Central Arizona Tradition gave rise to what is known as the Payson Tradition, probably during a  
15 transitional period labeled the Star Valley phase (A.D. 1000–1150). Settlements during this time consist of  
16 small surface masonry structures in the hilly areas bordering drainages. It is unknown whether pit houses  
17 continued to be occupied alongside the surface structures, as occurred in the Prescott and probably Verde  
18 Valley areas. Hohokam red-on-buff ceramics still make their way into the Mogollon Rim escarpment, as  
19 do Puebloan black-on-white ceramics from the Little Colorado and Cibola areas.

20 By A.D. 1150, the Payson Tradition had come to represent a stable local settlement system centered on  
21 four primary villages in Round Valley, Green Valley, and Star Valley, and on Houston Mesa. This period  
22 is known as the Payson phase. The primary villages are large by Payson standards (50–100 rooms) and  
23 were surrounded by numerous smaller outlying sites consisting of one or a few surface masonry  
24 structures. Decorated ceramics during this phase are relatively rare. Locally produced plain wares and red  
25 wares predominate. The greater Payson area had been abandoned by A.D. 1280, perhaps because of the  
26 Great Drought and its reduced precipitation and lowering of the water table.

27 The abandonment of the Payson area around A.D. 1280 was accompanied by an aggregation of people on  
28 Polles Mesa, just northwest of the Doll Baby Ranch. Polles Mesa supported a substantial late prehistoric  
29 population from at least A.D. 1250 to perhaps as late as 1400. Most people lived in a large, more-than-  
30 200-room village known as Polles Pueblo. This site contains a large plaza on its south end and is believed  
31 to contain a long, linear cleared-rock feature known to locals as a “racetrack.” These linear features are  
32 common on Perry Mesa and in Bloody Basin and may have been present along the Lower Verde River  
33 prior to the filling of Horseshoe Dam. The characteristics and location of Polles Pueblo indicate that it  
34 forms the eastern edge of a large, integrated late prehistoric settlement system that extends to both sides  
35 of the Middle and Lower Verde River. Polles Pueblo’s large size, formal plaza, and abundance of  
36 decorated pottery from the Homolovi and Hopi Buttes areas raise the possibility that this peculiarly  
37 situated site was a trade center that exchanged Winslow Orange Ware and Hopi Yellow Ware with the  
38 large Middle and Lower Verde River, Bloody Basin, and Perry Mesa sites.

39 After the prehistoric abandonment, Western Apache groups, who probably entered from the north-  
40 northeast as well as from the south, colonized the Mogollon Rim escarpment. A handful of radiocarbon  
41 dates show that the Apache were present by at least the A.D. 1600s (Herr and Wood 2004). By 1700, the  
42 Apache settlement system in the Mogollon Rim escarpment had become well established. While sites of  
43 this period have low visibility, mounded roasting pits, an occasional wickiup outline, and wiped plain  
44 ware ceramics are diagnostic indicators. Mixing of Apache and Yavapai groups occurred just north of the  
45 project area at the mouth of Fossil Creek and farther north in the Verde Valley.

1 Apache dominance of the Payson area continued unabated until the U.S. military began pursuing them in  
2 the 1860s, eventually incarcerating all Payson-area Apaches at Fort Verde and then at San Carlos. Around  
3 1900, Apache families were allowed to leave the San Carlos reservation. Many returned to their former  
4 home sites in the Payson area, only to find them colonized by Euro-American farmers and ranchers.  
5 Several families took up residence as squatters on Forest Service land surrounding the Payson town site.  
6 After the devastation to the traditional Apache economic system caused by the wars and subsequent  
7 confinement at San Carlos, many Apaches sought employment on large road and dam construction  
8 projects in the Payson area, along Fossil Creek, and south into Tonto Basin. Not until 1972 were the  
9 Dilzhe'e Apache of the Payson area granted an official reservation, which today consists of an  
10 approximately 370-acre parcel at the south end of Payson.

11 Explorations into Apachería were extremely rare during the years of Spanish Colonial (1540–1820) and  
12 Mexican Territorial (1820–1848) control. U.S. Territorial (1848–1912) occupation of the area did not  
13 commence in earnest until the late 1870s, when ranchers, farmers, and miners colonized the area.

14 Ranchers followed miners into the area, a few of whom took up long-term residence in the area. While  
15 ranching and farming dominated the early decades of Euro-American occupation, logging became a  
16 significant economic pursuit in the Payson area after 1900. The TNF was created in 1905 principally to  
17 protect the watersheds of the Salt and Verde rivers in anticipation of completion of the Salt River Dam  
18 (later Roosevelt Dam) and Reservoir. Travel routes in and out of the Payson area were greatly improved  
19 in the 1950s and 1960s as a result of road construction projects, such as SR 87 and SR 260. In recent  
20 decades, Payson has grown dramatically, as residential developments have filled many previously  
21 undeveloped areas within the Town's limits. Many acres of Forest Service land have also been transferred  
22 into private ownership via land exchanges to satisfy the real estate market in and near Payson. At the  
23 same time, Payson has intentionally built a reputation as a gateway to the many recreational areas in this  
24 portion of Arizona. Local economies have reaped the benefits of this strategy.

## 25 **Environmental Consequences**

26 Impacts to heritage resources, especially archaeological sites, can generally be defined as anything that  
27 results in the removal of, displacement of, or damage to artifacts, features, and/or deposits of cultural  
28 material from sites eligible for listing in the NRHP. Impacts can also include alterations to a property's  
29 setting or context. In the case of traditional cultural properties and sacred places, additional considerations  
30 may include alterations in the presence or availability of particular plant species and/or removing or  
31 limiting access by traditional practitioners.

32 Direct adverse impacts from the project could include physical construction disturbance in the project  
33 footprint. Other direct or indirect impacts could result from effects on one or more aspects of resource  
34 integrity (location, design, setting, materials, workmanship, feeling, and association), which would  
35 disturb the character of the setting. Indirect impacts could include loss of opportunities for interpretive  
36 development or educational uses as a result of loss of integrity or diminished qualities of setting.

37 Impacts to heritage resources are considered short term if they occur during construction and are visual  
38 only. Impacts are considered long term if they occur beyond construction and are caused by ground  
39 disturbance.

## 40 **No-Action Alternative**

41 Under the No-Action Alternative, no construction, operation, maintenance, or reclamation activities  
42 would take place. Thus, there would be no removal, displacement, or damage to artifacts, features, or  
43 deposits of cultural material. No direct or indirect impacts to heritage resources would occur.

1 Given the non-renewable nature of heritage resources—particularly archaeological and historical sites—  
2 any portion of the sites that has been damaged or removed diminishes their cultural and scientific value  
3 permanently, which could still occur without the project. Therefore, all effects on heritage resources are  
4 considered cumulative.

## 5 **Pipeline Alternatives**

### 6 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

7 The majority of Alternative 1 route was surveyed in 2009 (Dosh 2009); some additional survey was also  
8 performed by SWCA in 2011 (Tremblay et al. 2011). Sixteen archaeological sites are documented within  
9 the Alternative 1 ROW. Of the 16 sites, 13 are eligible for the NRHP and three are not eligible for the  
10 NRHP.

11 Construction activities associated with Alternative 1 could result in the removal of portions, or all of, the  
12 13 NRHP-eligible archaeological sites. Operation of the pipeline would not result in any direct or indirect  
13 impacts to heritage resources. Maintenance and reclamation activities could entail some degree of ground  
14 disturbance; thus, like construction activities, these activities could also result in the removal of portions,  
15 or all, of the 13 NRHP-eligible archaeological sites.

16 The Shoofly Village Ruins, while not located within the proposed pipeline corridor, may experience  
17 minor short-term indirect impacts to its setting during construction. Once construction is complete there  
18 would be no further impacts to the site.

19 Mitigation measures listed at the end of this section would reduce the direct impacts from removal of  
20 portions, or all, of the 13 NRHP-eligible sites and indirect short-term impacts to the Shoofly Village  
21 Ruins. As a result, Alternative 1 could result in direct and indirect, minor, adverse, site-specific, short-  
22 term, and long-term impacts to known heritage resources in the project area footprint.

23 Cumulatively, past and present activities that contribute to impacts to heritage resources include grazing  
24 (Little Green Valley complex), use, and maintenance of project area roads, vegetation treatments around  
25 subdivisions along East Verde River (thinning, fuelbreaks, pile burning, etc.), and timber and fuelwood  
26 sales. Additionally, future connections to the proposed pipeline by other northern Gila County  
27 communities have the potential to contribute to impacts to heritage resources. Each of these actions has  
28 the potential to remove, displace, or damage artifacts, features, and/or deposits of cultural material. Given  
29 the non-renewable nature of heritage resources—particularly archaeological and historical sites—any  
30 portion of the sites that has been damaged or removed diminishes their cultural and scientific value  
31 permanently.

### 32 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

33 The Alternative 2 route was surveyed in 2009 (Dosh 2009) and 2011 (Tremblay et al. 2011). The  
34 exceptions to the Alternative 1 alignment (depicted as dashed lines in Figure 2.4) that make up  
35 Alternative 2 were the segments surveyed by SWCA in 2010 and 2011. Seventeen archaeological sites are  
36 documented within the Alternative 2 ROW. Of the 17 sites, 14 are eligible for listing in the NRHP and  
37 three are not eligible for listing in the NRHP. These 14 NRHP-eligible sites include the same sites  
38 impacted by Alternative 1, plus one, AR-03-12-14-654; however, the 2011 survey (Tremblay et al. 2011)  
39 did not record any structures or buildings associated with AR-03-12-14-654 within the proposed ROW.

40 As with Alternative 1, construction activities associated with Alternative 2 could result in the removal of  
41 portions, or all, of 14 NRHP-eligible archaeological sites. Operation of the pipeline would not result in  
42 any direct or indirect impacts to heritage resources. Maintenance and reclamation activities could entail

1 some degree of ground disturbance; thus, like construction activities, these activities could also result in  
2 the removal of portions, or all, of the 14 NRHP-eligible archaeological sites.

3 Like Alternative 1, the Shoofly Village Ruins may experience minor short-term indirect impacts to its  
4 setting during construction. Once construction is complete there would be no further impacts to the site.

5 As a result, Alternative 2 would result in direct and indirect, minor, adverse, site-specific, short- and long-  
6 term impacts to known heritage resources in the project area footprint.

7 Cumulative impacts described under Alternative 1 would be the same for Alternative 2.

## 8 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

9 The portions of the Alternative 3 route that are the same as Alternative 1 were surveyed in 2009 (Dosh  
10 2009). The 7,500-foot-long portion of the pipeline alignment near Bear Canyon was surveyed in 2011  
11 (Tremblay et al. 2011).

12 Within the surveyed portions of the ROW, 14 archaeological sites have been documented within the  
13 Alternative 3 footprint. Of these 14 sites, 11 are considered eligible for listing in the NRHP and three sites  
14 are considered not eligible. These 14 sites include the same sites affected by Alternative 1, less two.

15 As with Alternatives 1 and 2, construction activities associated with Alternative 3 could result in the  
16 removal of portions, or all, of the 11 NRHP-eligible archaeological sites. Operation of the pipeline would  
17 not result in any direct or indirect impacts to heritage resources. Maintenance and reclamation activities  
18 could entail some degree of ground disturbance; thus, like construction activities, these activities could  
19 also result in the removal of portions, or all, of the 11 NRHP-eligible archaeological sites.

20 As with Alternatives 1 and 2, construction and maintenance activities associated with Alternative 3 could  
21 result in short-term, indirect impacts to the visual setting and landscape to Shoofly Village Ruins.

22 As a result, Alternative 3 would result in direct and indirect, minor, adverse, site-specific, short- and long-  
23 term impacts to known heritage resources in the project area footprint.

24 Cumulative impacts described under Alternative 1 would be the same for Alternative 3.

## 25 ***Water Treatment Plant Alternatives***

### 26 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

27 The Alternative WTP1 area was surveyed in 2011 (Tremblay et al. 2011). No archaeological sites were  
28 identified within the project footprint. No direct or cumulative impacts to heritage resources are  
29 anticipated under Alternative WTP1. WTP1 is not visible from the Shoofly Village Ruins; therefore,  
30 no indirect impacts to heritage resources are anticipated.

31 As a result, Alternative WTP1 would result in no impacts to a known heritage resource in the project area  
32 footprint.

33 Cumulative impacts described under Pipeline Alternative 1 would be the same for Alternative WTP1.

**1 ALTERNATIVE WTP2 – HOUSTON MESA WEST**

2 The Alternative WTP2 area was surveyed in 2011 (Tremblay et al. 2011). No archaeological sites were  
3 identified within the project footprint. No direct or cumulative impacts to heritage resources are  
4 anticipated under Alternative WTP2.

5 Indirect impacts to heritage resources would occur due to the potential of WTP2 to be visible from the  
6 Shoofly Interpretive Site. The WTP2 would change the permanent landscape; resulting in an indirect  
7 visual impact since the WTP2 would be a contrast to the existing conditions.

**8 ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

9 The Alternative WTP3 area was surveyed in 2011 (Tremblay et al. 2011). No archaeological sites were  
10 identified within the project footprint. No direct or cumulative impacts to heritage resources are  
11 anticipated under Alternative WTP3. WTP3 is not visible from the Shoofly Village Ruins; therefore,  
12 no indirect impacts to heritage resources are anticipated.

13 Cumulative impacts described under Pipeline Alternative 1 would be the same for Alternative WTP3.

**14 ALTERNATIVE WTP4 – TAILRACE SITE**

15 The Alternative WTP4 area was surveyed in 2011 (Tremblay et al. 2011). No archaeological sites were  
16 identified within the project footprint. No direct or cumulative impacts to heritage resources are  
17 anticipated under Alternative WTP4. WTP4 is not visible from the Shoofly Village Ruins; therefore,  
18 no indirect impacts to heritage resources are anticipated.

19 Cumulative impacts described under Pipeline Alternative 1 would be the same for Alternative WTP4.

**20 ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

21 The majority of Alternative WTP5 area was surveyed in 2009 (Dosh 2009). One NRHP-eligible  
22 archaeological site was identified in the southwest corner of the project footprint. The location of WTP5  
23 was then shifted slightly to the east to avoid the site, leaving a small portion to be surveyed along the  
24 eastern edge of the project footprint. This was surveyed in 2011 (Tremblay et al. 2011); no archaeological  
25 sites were recorded.

26 No direct or cumulative impacts to heritage resources are anticipated under Alternative WTP5. WTP5 is  
27 not visible from the Shoofly Village Ruins; therefore, no indirect impacts to heritage resources are  
28 anticipated.

29 Cumulative impacts described under Pipeline Alternative 1 would be the same for Alternative WTP5.

**30 ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

31 The Alternative WTP6 area was surveyed in 2009 (Dosh 2009). No archaeological sites were identified  
32 within the project footprint. No direct, indirect, or cumulative impacts to heritage resources are  
33 anticipated under Alternative WTP6.

**34 ALTERNATIVE WTP7 – PROPOSED ACTION**

35 The Alternative WTP7 area was surveyed in 2011 (Tremblay et al. 2011). One archaeological site was  
36 recorded in the WTP footprint within the pipeline realignment construction corridor south of the plant;

1 the site is eligible for the NRHP. If the area where the site is located would be subjected to ground  
2 disturbance, the proposed project would have a long-term direct adverse effect to the site. Mitigation  
3 measures (see below) would need to be implemented to reduce the adverse effects to the site.

#### 4 **Infrastructure Tie-Ins**

5 Construction of infrastructure tie-ins from the WTP to the existing sewer and water distribution systems  
6 would be as described for Pipeline Alternative 1. The existing infrastructure is currently buried at depths  
7 similar to those described for Pipeline Alternative 1. It is anticipated that installation of these tie-ins  
8 would occur within previously disturbed existing roadways. Once final locations for the tie-ins have been  
9 established, the Town would ensure that a cultural resources survey is conducted, consistent with  
10 Reclamation policy, and a final report submitted to Reclamation. Reclamation would use the report to  
11 complete Section 106 consultation with the Arizona SHPO, pursuant to the NHPA. Section 106  
12 consultation would be completed prior to any ground-disturbing activities related to the proposed project.

#### 13 **Mitigation**

- 14 • Heritage resources: archaeological sites will be avoided at all times; if avoidance is not possible  
15 (i.e., the site is in the project footprint and cannot be avoided because of engineering constraints),  
16 under Section 106 of the NHPA, the site will be mitigated to Secretary of the Interior and Forest  
17 Service standards prior to construction, as appropriate.
- 18 • Staging areas will avoid cultural resources. If cultural resources have been identified during the  
19 preconstruction survey, the site(s) will be avoided within the staging area and/or the staging area  
20 will not be used.
- 21 • For any infrastructure tie-ins, if Reclamation and the Forest Service deem it necessary an  
22 archaeological survey of the tie-in footprint (including project segments on private land) will be  
23 conducted prior to construction.
- 24 • Archaeological sites will be avoided at all times. An archaeological monitor may be present to  
25 ensure sites are avoided during construction.
- 26 • If avoidance is not possible (i.e., the site is in the project footprint and cannot be avoided because  
27 of engineering constraints), in accordance with Section 106 of the NHPA, the site will be  
28 mitigated to Secretary of the Interior and Forest Service standards prior to construction, as  
29 appropriate.
- 30 • During pipeline construction, an archaeologist will monitor all ground disturbance with the  
31 potential to disturb buried cultural resources within 100 feet of a known archaeological site.
- 32 • In the areas where the pipeline is located, ground disturbance consists of the pipeline trench only;  
33 according to the current engineering plans, no facilities other than the pipeline would be installed  
34 near the affected sites.
- 35 • The pipeline is to be buried at least 5 feet deep and no more than 15 feet deep (Forest Service  
36 2011). In the area around AR-03-12-04-1414, the archaeologist will ensure that any phone trees  
37 near the proposed pipeline remain undisturbed.
- 38 • Archaeological site locations will be flagged to identify avoidance areas, as needed.
- 39 • Construction crews will not park vehicles or other equipment within flagged site boundaries.
- 40 • The archaeologist will monitor pipeline trench excavation until sterile soil is reached.  
41 The backdirt will be inspected for artifacts during excavation.

- 1 • If features are encountered within the pipeline trench, the archaeologist will contact the Forest  
2 Service archaeologist immediately.
- 3 • Construction work in the area of the discovery will cease until the Forest Service archaeologist  
4 can assess the significance of the discovery.
- 5 • All features encountered during trenching will be thoroughly recorded by the archaeological  
6 monitor.

## 7 LAND USE

### 8 Affected Environment

9 The study area is located entirely on lands managed by the Forest Service, with the following exceptions:  
10 WTP6, existing wells that would be designated and permitted as ASR wells, the tie-in from the WTP and  
11 the existing sewer system, and the tie-in from the WTP to the existing water delivery system. Portions of  
12 Houston Mesa Road and FR 199 are held under easement by Gila County, while the Town holds the  
13 easement for the road corridor for the southern portion of Houston Mesa Road. Several private  
14 subdivisions are located adjacent to the project footprint, as well; these include Mesa del Caballo, Beaver  
15 Valley Estates, Wonder Valley, Rim Trail Estates, and Whispering Pines. In addition to these, the  
16 communities of Freedom Acres and Verde Glen require access from Houston Mesa Road. These  
17 subdivisions are private in-holdings within the TNF (Forest Service 1985a). The Home Depot is located  
18 at the intersection of Houston Mesa Road and SR 87; the Houston Mesa General Store is approximately  
19 2 miles up Houston Mesa Road from the SR 87 intersection.

20 Table 3.3 lists special uses currently permitted by the Payson Ranger District that are included in the  
21 project area.

22 **Table 3.3.** Special Use Permits in the Project Area

Special Use Permit	Holder of Permit	Location
Houston Mesa Road: easement	Gila County	FR 199
West Houston Mesa Road: easement	Town	Intersection of W. Houston Mesa Road and SR 87
Municipal water transmission line	Town	Adjacent to W. Houston Mesa Road
Sewer line	NGCSD	North side of Houston Mesa Road from Payson to Mesa del Caballo
Power transmission line	APS	From Payson to Mesa del Caballo; from Mesa del Caballo to Whispering Pines
Domestic water pipeline and storage tank	Rim Trail Domestic Water Improvement District	Various

# 1 Environmental Consequences

## 2 **No-Action Alternative**

3 Under the No-Action Alternative, the pipeline and WTP would not be constructed. The existing land uses  
4 would remain in their current condition and would not experience any direct, indirect, or cumulative  
5 effects if the No-Action Alternative were implemented.

## 6 **Pipeline Alternatives**

### 7 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

8 Under Alternative 1, there would be no surface ownership changes; however, the Town would be issued a  
9 special use permit for construction, operation, and maintenance of the pipeline. The land uses within the  
10 special use permit coverage area would result in long-term changes, but these changes would negligible  
11 since the current land uses of Alternative 1 include other, similar, special use permits. The special use  
12 permits described in Table 3.3 would require modifications in order to accommodate Alternative 1 during  
13 construction, but these modifications would not result in changes to the existing special use permits.  
14 The modifications, if required, would be short term. The modifications include trenching through, under,  
15 or over roads; temporary access restrictions; and soil stockpiling. Modifications to the special use permits  
16 would be restricted to the surface facilities only; overhead transmission lines would not require  
17 modifications. Occasional maintenance may also require modifications to the special use permits during  
18 the operation of Alternative 1, but these impacts would not result in measurable changes to the existing  
19 special use permits.

20 The total temporary land use acreage that would be potentially changed during construction of Alternative  
21 1 would be up to approximately 306 acres. For safety concerns, the public would not be permitted to  
22 access the portions of the 306 acres under active construction, resulting in the change of open forest to  
23 closed-to-the public forest. This acreage does not include the existing road bed, only the land outside the  
24 road bed within the 200-foot-wide ROW.

25 Cumulative impacts to land use would occur if other northern Gila County communities pursued  
26 connections to the pipeline and those connections result in conflicts in land use and/or require  
27 modification of existing use permits. These impacts would be long term but would likely be minor since  
28 the communities' proximity to the Alternative 1 alignment is relatively close and would not likely require  
29 a large-scale change to existing land uses, if at all.

### 30 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

31 Alternative 2 would result in indirect, direct, and cumulative impacts to land use.

32 At the tailrace, Alternative 2 would traverse the west bank before turning to the west to the existing  
33 Harvest Lane. The land directly adjacent to the tailrace and SRP powerhouse is undeveloped TNF land.  
34 The Alternative 2 alignment would exit the tailrace and travel along the west bank of the East Verde  
35 River on undeveloped TNF land for approximately 3,000 feet before it reaches privately owned land.  
36 This privately owned land is primarily used for residential purposes.

37 During construction, there would be direct impacts to the existing land uses and land ownership since a  
38 temporary and permanent utility easement would be required; however, this change would negligible  
39 since the current land uses of Alternative 2 include other, similar, private and utility easements. The 200-  
40 foot-wide construction easement would not result in a temporary or permanent change in land ownership.

1 Alternative 2 would also include a portion of the alignment north and west of the Whispering Pines  
2 community that would leave the road and traverse undeveloped TNF land. This alignment would not  
3 result in changes to land ownership. As with the Tailrace alignment discussed above, construction would  
4 result in short-term changes to the land uses. This change would negligible since the current land uses of  
5 Alternative 2 include other, similar, special use permits or private easements. The short-term impact  
6 would only occur during construction of Alternative 2. Similarly, the Alternative 2 alignment would  
7 depart the road bed east and west of the WTP7 location and traverse undeveloped land.

8 The total temporary land use acreage (the construction ROW) that would be changed during construction  
9 of Alternative 2 would be up to 310.06 acres.

10 Operation and maintenance of Alternative 2 would not result in any indirect or direct impacts to land use.

## 11 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

12 Alternative 3 would result in indirect, direct, and cumulative impacts to land use.

13 Alternative 3 departs from the roadway south of the Whispering Pines community and would traverse  
14 undeveloped TNF land in order to avoid the Second and Third crossings of the East Verde River. This  
15 alignment would not result in changes to land ownership. As with Alternative 2, discussed above,  
16 construction would result in short-term changes to the land uses. These changes would negligible since  
17 the current land uses of Alternative 3 include other, similar, special use permits or private easements.  
18 The short-term impact would only occur during construction of Alternative 3.

19 The total temporary land use acreage that would be changed during construction of Alternative 3 would  
20 be up to 314.83 acres.

21 Operation and maintenance of Alternative 3 would not result in any indirect or direct impacts to land use.

## 22 ***Water Treatment Plant Alternatives***

### 23 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

24 As with the impacts described above to pipeline alternatives, construction of Alternative WTP1 has the  
25 potential to result in temporary access restrictions, discussed in Access and Travel Management.  
26 The land use of the WTP1 site would change, if under a separate authorization, the site for WTP1 is  
27 purchased from the TNF prior to construction. The current land use is open forest land and would change  
28 to a municipal site. The resultant change in landownership would not adversely impact land use, since the  
29 WTP1 site is currently not actively managed for recreation, cultural resources, wildlife, or other special  
30 land uses. The surrounding TNF land would still be available for use by the public.

31 The associated electric power line required for WTP1 operation would not result in changes to land use or  
32 land ownership since the power line would not require outright purchase of the land—the power line  
33 would be part of the special use permit issued for the pipeline. Operation and maintenance of WTP1  
34 would not impact land use. No other direct or indirect effects are anticipated. Cumulative impacts  
35 resulting from Alternative WTP1 would be the same as those described above under Pipeline  
36 Alternatives.

### 37 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

38 Alternative WTP2 would result in indirect, direct, and cumulative impacts to land use. Nine privately  
39 owned parcels (including eight residences and one vacant lot) would be adjacent to the WTP2 site and

1 would be directly impacted since the privately owned land would no longer be connected to NFS land.  
2 Additionally, construction and operation of the WTP would alter the landscape and views of these  
3 residents. Therefore, in addition to property value price fluctuations driven by other market considerations  
4 (i.e., location, size of the house, number of bathrooms, general condition, etc.), two of the characteristics  
5 of these nine lots (access to the TNF and viewshed) would be affected and could reduce or otherwise  
6 influence the market value for the current owners of the eight lots adjacent to Alternative WTP2.  
7 Any transactions in the future would not be affected.

8 The land use of the 10-acre WTP2 site would change, if under a separate authorization, the site for WTP2  
9 is purchased from the TNF prior to construction.

### 10 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

11 Alternative WTP3 would result in the same indirect, direct, and cumulative impacts to land use as  
12 Alternative WTP1.

### 13 **ALTERNATIVE WTP4 – TAILRACE SITE**

14 Alternative WTP4 would result in the same direct and cumulative impacts to land use as Alternative  
15 WTP1. Although Rim Trail Estates is in the general vicinity of the proposed WTP4 site, there is a buffer  
16 of mature trees that blocks the view of the WTP4 site from the residents of Rim Trail Estates.

### 17 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

18 Alternative WTP5 would result in the same indirect, direct, and cumulative impacts to land use as  
19 Alternative WTP1.

### 20 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

21 Alternative WTP6 would be located on private land. The land use of this privately owned land would  
22 change from a vacant, unused lot to an operating municipal site. The land that would be used for  
23 Alternative WTP6 is currently zoned as ‘general commercial’ (Town 2008), which is compatible with  
24 operation of the WTP facility. Therefore, Alternative WTP6 would not result in any changes to current  
25 zoning and planning in the Town. The issuance of a conditional use permit and the adherence to the  
26 Commercial District Stipulations and Provisions outlined in the Town’s Unified Development Code  
27 would allow for the location and operation of WTP6.

28 Cumulative impacts to land use would be the same as described under Alternative WTP1.

### 29 **ALTERNATIVE WTP7 – PROPOSED ACTION**

30 Alternative WTP7 would result in indirect, direct, and cumulative impacts to land use. No privately  
31 owned parcels would be adjacent to the WTP7 site. Construction and operation of the WTP would alter  
32 the landscape and views of residents with views to the south from Mesa del Caballo. Any transactions in  
33 the future would not be affected.

34 The land use of the WTP7 site would change, if under a separate authorization, the site for WTP7 is  
35 purchased from the TNF prior to construction.

1 **Infrastructure Tie-Ins**

2 Impacts from installation of buried pipeline to connect the WTP to the existing sewer and water  
 3 distribution systems would generally be similar to that described for Pipeline Alternative 1. No change is  
 4 anticipated to existing land uses on the ground surface once construction has been completed. Use of  
 5 ROWs for this project would need to be compatible with use by the underlying landowner and any pre-  
 6 existing easements.

7 **Mitigation**

- 8 • None.

9 **LIVESTOCK GRAZING**

10 **Affected Environment**

11 The East Verde River, one of the perennial tributaries of the Verde River, has historically been the  
 12 primary source of water for small ranching operations in the Payson area since the early 1870s. Early on,  
 13 livestock had negative impacts to vegetation and soils in the TNF as a result of the heavy, unregulated  
 14 grazing of the area. Fencing of NFS lands in the 1920s helped protect vegetation from the impacts of  
 15 overgrazing; the fencing allowed for improved grazing management, including removal of non-permitted  
 16 livestock and development of livestock waters away from the river. Stocking levels have been reduced on  
 17 allotments in the TNF, and management changes have been made that increased the amount of control  
 18 over domestic livestock grazing in the area.

19 The Little Green Valley Complex (LGVC) are the only active grazing allotments in the project area.  
 20 Five allotments make up the LGVC allotment: Payson, Cross V, Green Valley, Indian Gardens, and Star  
 21 Valley. An existing water impoundment, allotment fencing and a loading chute are adjacent to the  
 22 northern boundary of the WTP2 site. In addition, cattle trucks utilize the areas surrounding WTP1 and  
 23 WTP2 for truck maneuvering. The project area affects only the Payson and Cross V units of the LGVC.  
 24 Table 3.4 describes the affected grazing units of the LGVC.

25 **Table 3.4.** Active Grazing Allotments under Consideration in this Environmental Assessment

Allotment Name	Forest Service Land Area (acres)	Permitted Cattle	Pastures Affected	Permit Holder	Stocking Status
LGVC  (project area includes Payson and Cross V units of this allotment)	Total: 164,00  Payson and Cross V units: 75,119	Total: 619 adult cattle yearlong and 40 yearlings for 5–10 months  Payson and Cross V units: 250 adult cattle yearlong	East Verde, Girl Scout, Beaver Valley, Bean Patch, Houston Mesa, Butcher	TW Land and Livestock, LLC c/o Ray Tanner	Payson and Cross V units: 388 adult cattle and 97 yearlings authorized until May 15; 400 adult cattle for remainder of the grazing year. The East Verde, Girl Scout, and Beaver Valley pastures have not been grazed for at least 10 years but may be grazed in future years. The Bean Patch, Houston Mesa, and Butcher pastures were last grazed in 2006. The Bean Patch and Houston Mesa pastures were used in April and May 2010. The Butcher pasture is not active or currently scheduled for future grazing.

26 Source: Personal communication, Chris Thiel, Range Management Specialist, Tonto National Forest (2010).

# 1 Environmental Consequences

## 2 **No-Action Alternative**

3 Under the No-Action Alternative, there would be no construction, operation, maintenance, or reclamation  
4 activities or changes from current conditions. Grazing activities would not be affected. The No-Action  
5 Alternative would have no direct, indirect, or cumulative impacts to livestock grazing.

## 6 **Pipeline Alternatives**

### 7 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

8 During construction, Alternative 1 could result in the short-term removal of up to 304 acres; this acreage  
9 is calculated to include the seven proposed staging areas and the 200-foot-wide pipeline ROW, excluding  
10 the existing road bed. Up to 304 acres could be removed from grazing within the LGVC (specifically the  
11 Payson and Cross V allotments) in the short term. This represents a short-term loss of 0.19% of the total  
12 LGVC allotment, or 0.40% of the Payson and Cross V units. This could result in cattle dispersal within  
13 the grazing pastures during construction; however, no long-term impacts to grazing are anticipated as a  
14 result of operation and maintenance of the pipeline. A full discussion of the potential impacts to noxious  
15 weeds is included in Noxious Weeds. However, it is important to note that ground-disturbing activities  
16 may introduce noxious weeds to the project area, which may reduce or increase livestock forage  
17 availability, depending on the species of noxious weed. Finally, pipeline construction could result in  
18 damage to existing cattleguards, fences, and/or gates; however, any damage to these features would be  
19 repaired or the safeguards replaced.

20 Alternative 1 would result in direct, negligible, adverse, site-specific, short-term impacts to known  
21 livestock grazing in the project area footprint. In addition, staging area 6 would not be available for cattle  
22 truck turn-around areas during construction of Alternative 1, resulting in an adverse, short-term, and site-  
23 specific impact to livestock grazing.

24 Cumulatively, future connections to the Cragin pipeline by other northern Gila County communities  
25 could result in additional ground disturbance, thereby resulting in additional cattle dispersal, a reduction  
26 in livestock forage availability, etc. However, as with the direct and indirect impacts from pipeline  
27 construction, these impacts would occur during construction only.

### 28 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

29 Impacts to Alternative 2 would be the same as for Alternative 1. Acreages for disturbance would include  
30 the short-term removal of up to 308 acres of land available for grazing within the LGVC allotment  
31 (specifically the Payson and Cross V units). This represents a short-term loss of 0.19% of the total LGVC  
32 allotment, or 0.41% of the Payson and Cross V units. Alternative 2 would result in direct, negligible,  
33 adverse, site-specific, short-term impacts to known livestock grazing in the project area footprint.

34 Cumulative impacts described under Alternative 1 would be the same for Alternative 2.

### 35 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

36 Impacts to Alternative 3 would be the same as for Alternative 1. Acreages for disturbance would include  
37 the short-term removal of up to 313 acres of land available for grazing within the LGVC allotment  
38 (specifically the Payson and Cross V units). This represents a short-term loss of 0.19% of the total LGVC

1 allotment, or 0.42% of the Payson and Cross V units. Alternative 3 would result in direct, negligible,  
2 adverse, site-specific, short-term impacts to known livestock grazing in the project area footprint.

3 Cumulative impacts described under Alternative 1 would be the same for Alternative 3.

#### 4 **Water Treatment Plant Alternatives**

##### 5 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

6 Alternative WTP1 would result in 5 acres of ground disturbance. Thus, 5 acres of land available for  
7 grazing within the LGVC allotment (specifically the Payson and Cross V units) would be lost. This  
8 represents a long-term loss of 0.003% of the total LGVC allotment, or 0.007% of the Payson and Cross V  
9 units. As with the pipeline alternatives, ground-disturbing activities may introduce noxious weeds to the  
10 project area, which could reduce livestock forage availability. The proposed WTP would be fenced to  
11 prevent any grazing or wildlife conflicts. Cattle trucks utilizing the area surrounding WTP1 as a truck-  
12 maneuvering and turn-around area would continue to find it available, but the available area would be  
13 5 acres smaller and therefore would require tighter turn-arounds.

14 Alternative WTP1 would result in direct, negligible, adverse, site-specific, long-term impacts to known  
15 livestock grazing in the project area footprint.

16 Cumulative impacts described under Pipeline Alternative 1 would be the same for Alternative WTP1.

##### 17 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

18 Alternative WTP2 would have direct, indirect, and cumulative effects on livestock grazing. Alternative  
19 WTP2 would result in 10 acres of ground disturbance. Thus, 10 acres of land available for grazing within  
20 the LGVC allotment (specifically the Payson and Cross V units) would be lost. This represents a long-  
21 term loss of 0.03% of the total LGVC allotment, or 0.07% of the Payson and Cross V units. The WTP2  
22 footprint would not impact the livestock grazing activities that utilize the existing Shoofly Tank, corral,  
23 or loading chute.

24 Alternative WTP2 is anticipated to result in adverse and long-term impacts to the existing water  
25 impoundment and allotment fencing

##### 26 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

27 Alternative WTP3 would have the same direct, indirect, and cumulative effects on livestock grazing as  
28 Alternative WTP1.

##### 29 **ALTERNATIVE WTP4 – TAILRACE SITE**

30 Alternative WTP4 would have the same direct, indirect, and cumulative effects on livestock grazing as  
31 Alternative WTP1.

##### 32 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

33 Alternative WTP5 is not located within an active grazing allotment; therefore, there would be no direct,  
34 indirect, or cumulative effects on livestock grazing.

## 1 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

2 Alternative WTP6 is not located within an active grazing allotment; therefore, there would be no direct,  
3 indirect, or cumulative effects on livestock grazing.

## 4 **ALTERNATIVE WTP7 – PROPOSED ACTION**

5 Alternative WTP7 would have the same direct, indirect, and cumulative effects on livestock grazing as  
6 Alternative WTP1.

## 7 ***Infrastructure Tie-Ins***

8 It is anticipated that installation of the infrastructure tie-ins would occur within previously disturbed  
9 existing roadways. No grazing lands would be impacted, and no impacts to livestock grazing would result  
10 from construction and operation of the tie-ins.

## 11 ***Mitigation***

- 12 • Forest Service range personnel will be contacted before any construction activities are undertaken  
13 on affected allotments so that potentially affected permittees could be notified.
- 14 • Any existing fences or other range improvements that are damaged during construction would  
15 have to be fixed at contractor's expense. Temporary fencing would be installed to maintain any  
16 enclosures or pastures.
- 17 • To prevent the spread of noxious weeds, prior to entering or leaving the project area, all earth-  
18 moving and hauling equipment would be cleaned of all plant parts and soil to help prevent the  
19 spread of noxious weeds.

## 20 **NOISE**

### 21 **Affected Environment**

22 Acoustics is the study of sound, and noise is defined as unwanted sound. Under certain conditions, noise  
23 may cause hearing loss, interfere with human activities at home and work, and in various ways affect  
24 people's health and well-being. Sound is measured on a logarithmic scale, expressed in decibels (dB),  
25 which is the accepted standard unit for measuring sound pressure amplitude using a more manageable  
26 range of numbers. On this scale, an increase of 10 dB represents a perceived doubling of loudness to  
27 someone with normal hearing. When describing sound and its effect on a human population, A-weighted  
28 sound levels are typically used to account for or approximate the response of the human ear. The term  
29 "A-weighted filter" refers to a filtering of the noise signal in a manner that corresponds to the way the  
30 human ear perceives sound. The A-weighted filter de-emphasizes the very low- and the very high-  
31 frequency components of the sound in a manner similar to the frequency response of the human ear and  
32 correlates well with subjective reactions to noise. The A-weighted sound level is denoted dBA. The dBA  
33 has been found to correlate well with people's judgment of the "noisiness" of different sounds and has  
34 been used for many years as a measure of community and industrial noise (Harris 1991).

35 Current noise-producing activities within the project area include, but may not be limited to, vehicles  
36 traveling the roadways and roadway maintenance conducted by the Town, Gila County, and TNF.

1 The Town does not have a noise ordinance that regulates time periods and allowable decibels. As recently  
 2 as the January 2003 General Plan Update (Partners for Strategic Action 2003), the Town has continued to  
 3 address traffic noise as residential and recreational uses increase along SR 87 and 260. The airport, while  
 4 well outside the project vicinity, supports approximately 30,000 operations a year and is the most  
 5 significant noise producer in the area.

6 The Forest Service does not have a noise ordinance that regulates time periods and allowable decibels.

7 Sensitive noise receptors can be defined as areas, buildings, or gatherings that would be adversely  
 8 impacted by a noise that would exceed the intended land use's current noise levels (as defined by FHWA  
 9 at 23 CFR 772). Sensitive noise receptors exist at the northern Gila County communities at Mesa del  
 10 Caballo, Freedom Acres, Wonder Valley, Rim Trail Estates, Beaver Valley Estates, Whispering Pines,  
 11 Verde Glen, and Washington Park. All sensitive receptors within the project area are residences.  
 12 No churches, schools, or libraries are present.

## 13 Environmental Consequences

### 14 *No-Action Alternative*

15 Under the No-Action Alternative, noise levels in the project area would remain unchanged from current  
 16 conditions. There would be no direct, indirect, or cumulative effects on noise if the No-Action Alternative  
 17 were implemented.

### 18 *Pipeline Alternatives*

#### 19 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

20 Noise associated with the construction of Alternative 1 would include heavy equipment operation, haul  
 21 trucks, and blasting. Table 3.5 shows noise levels for typical equipment used during the construction of  
 22 the project.

23 Noise impacts from construction activities would be moderate, adverse, and short-term (occurring over  
 24 the 18- to 24-month period). The associated noise impacts of construction equipment would be temporary  
 25 and intermittent, as the construction activity would not be constant in one area; it would progress up and  
 26 down Houston Mesa Road as the pipeline construction continues along the Alternative 1 alignment.

27 **Table 3.5. Typical Noise Levels of Construction**  
 28 **Equipment**

Equipment Category	Noise Level at 45 feet (dBA)
Dump truck	88
Portable rock drill	88
Pneumatic tool	85
Grader	85
Backhoe	81
Dozer	78

29 Source: Crocker and Kessler (1982)

1 Blasting would have major, adverse, and short-term impacts to noise levels along site-specific locations of  
2 the Alternative 1 alignment. As discussed in Chapter 2, blasting is anticipated to be required at, but  
3 not limited to, the Third Crossing of the East Verde River and areas west of the Whispering Pines  
4 development. Each blast would be an estimated 125 dBA and last for 1.5 seconds, assuming the receptor  
5 is 250 feet away. There are approximately 25 sensitive receptors less than 1,000 feet north of Third  
6 Crossing that would be adversely affected by the noise created from blasting. The impact to sensitive  
7 receptors resulting from blasting would cease to exist once construction is complete. Blasting is  
8 anticipated to be required in areas where solid rock is encountered that conventional equipment  
9 (i.e., backhoe with hammer attachment, rock saw equipment, etc.) cannot remove. In areas where blasting  
10 would occur, the areas would be cleaned of loose material to limit the amount of back shatter from  
11 occurring. Blast mats may also be used over the blasting area to prevent back shatter from occurring; and  
12 would decrease the noise impacts associated with blasting.

13 The construction impact to noise would be far less in areas along the alignment that do not include  
14 sensitive receptors, such as isolated TNF lands. Undeveloped areas are often sought out by users who  
15 seek areas with low noise levels, such as a trailhead or along the East Verde River. However, existing  
16 noise levels from traffic along the roadways have effectively precluded complete silence along the  
17 Alternative 1 alignment. Construction of Alternative 1 would have major, local, adverse, short-term  
18 impacts on noise levels that would last for the duration of construction. A description of the impacts of  
19 noise on wildlife may be found in the Wildlife Section, page 116.

20 During operation and maintenance of Alternative 1, Town staff will be traveling the alignment in vehicles  
21 to perform annual inspections and repairs, if needed. The additional traffic caused by the vehicles would  
22 cause a minor, long-term, cumulative increase in noise levels along with project area traffic but would not  
23 result in measurable changes to the existing noise created from traffic on the roadways.

## 24 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

25 Alternative 2 would result in the same indirect, direct, and cumulative impacts to noise as Alternative 1,  
26 except as described below.

27 As discussed in Chapter 2, blasting is anticipated to be required at, but not limited to, Third Crossing of  
28 the East Verde River and the portion of Alternative 2 that would depart from the existing road bed north  
29 and west of the Whispering Pines community on undeveloped TNF land. Sensitive receptors are not  
30 located within 1,000 feet of this portion of Alternative 2.

## 31 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

32 Alternative 3 would result in the same indirect, direct, and cumulative impacts to noise as Alternative 1,  
33 except as described below.

34 Sensitive receptors are not located within 1,000 feet of the portion of Alternative 3 that would depart from  
35 the road bed.

## 36 ***Water Treatment Plant Alternatives***

### 37 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

38 Construction of Alternative WTP1 would involve heavy equipment and haul trucks but would not require  
39 the blasting described under Pipeline Alternatives. Mitigation measures discussed in Chapter 2 would  
40 decrease the noise impacts. Operation and maintenance of WTP1 would not result in noise impacts since  
41 the compressors and associated noise-producing facilities would be wholly contained within a warehouse.

1 In addition, previously discussed, the WTP1 would be offline for approximately three months every year.  
2 The sensitive receptors would experience local, adverse, moderate, short-term impacts during  
3 construction.

4 Cumulative noise impacts would only occur during construction, which is anticipated to last  
5 approximately 18 to 24 months. During construction, the incremental impact of WTP1 construction noise  
6 and noise generated from the public use of FR 199 would result in a cumulative noise impact, as sensitive  
7 receptors are located approximately 0.5 mile southwest of the WTP1 site in the Mesa del Caballo  
8 residential subdivision. Since noise created from operation and maintenance of WTP1 would not be  
9 audible outside the WTP1 building, cumulative noise impacts would not occur during operation and  
10 maintenance of WTP1.

#### 11 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

12 Alternative WTP2 would result in the same indirect, direct, and cumulative impacts to noise as  
13 Alternative WTP1.

#### 14 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

15 Alternative WTP3 would result in the same indirect, direct, and cumulative impacts to noise as  
16 Alternative WTP1.

#### 17 **ALTERNATIVE WTP4 – TAILRACE SITE**

18 Alternative WTP4 would result in indirect and direct impacts to noise. Sensitive receptors are present  
19 within 0.01 mile of the WTP4 site; therefore, short-term, adverse impacts would result during the  
20 construction of the WTP4.

21 In addition, the additive effect of noise deriving from the existing SRP generating station, when combined  
22 with noise associated with construction and operation of WTP4, would result in a minor, long-term,  
23 adverse impact. During operation, the cumulative noise impact would decrease since the operation of  
24 WTP4 is less noisy than during construction, due to the water treatment facilities and their noise being  
25 contained within a building.

#### 26 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

27 Alternative WTP5 would result in the same indirect and direct impacts to noise as Alternative WTP1.  
28 Sensitive receptors are not present at the WTP5 site, which is adjacent to a commercial shopping center.  
29 Therefore, the cumulative impacts to noise would be less than for Alternative WTP1.

#### 30 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

31 Alternative WTP6 would result in the same indirect and direct impacts to noise as Alternative WTP1.  
32 Alternative WTP6 would result in the same cumulative impacts as Alternative WTP5.

#### 33 **ALTERNATIVE WTP7 – PROPOSED ACTION**

34 Alternative WTP7 would result in the same indirect, direct, and cumulative impacts to noise as  
35 Alternative WTP1.

## 1 **Infrastructure Tie-Ins**

2 Noise impacts from installation of buried pipelines needed to connect the WTP to the existing sewer and  
3 water distribution systems would be very similar to those described for Pipeline Alternative 1; however,  
4 the overall duration of the activities generating construction-related noise would be shorter, and no  
5 blasting would occur. There would be no noise generated from use of the tie-ins. For Alternative WTP4,  
6 instead of a connection between the WTP and the existing sewer line, waste discharge would be stored in  
7 a tank and then transported by truck to the NGCSD WWTP twice monthly. There would be a long-term  
8 nominal increase in traffic noise from the trucks that would be required to haul stored waste discharge if  
9 the WTP4 site is chosen. The increase in traffic noise would result from the approximately two 36-mile  
10 round-trips per month that would occur as a result of transporting by truck the stored waste discharge  
11 from the WTP4 to the NGCSD WWTP. This would add truck traffic noise in an area that does not  
12 routinely experience that type and frequency of traffic; however, as described in Access and Travel  
13 Management, the increase in traffic during construction would be consistent with current MLs.

## 14 **Mitigation**

- 15 • Notice to residents and businesses in the project area shall be provided at least two weeks prior to  
16 construction involving blasting.
- 17 • Blasting would occur during the MSO's non-foraging hours (between one hour after sunrise and  
18 one hour before sunset).

## 19 **RECREATION**

### 20 **Affected Environment**

21 FR 32B, FR 32 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa Road), and West  
22 Houston Mesa Road provide access to numerous recreation sites along the proposed pipeline alignments.  
23 The primary recreation experiences along FR 32B, FR 32, FR 64, and FR 199 and vicinity include  
24 fishing, wading, and swimming. Other recreation experiences in this area of the TNF may include hiking,  
25 wildlife viewing, camping, horseback riding, backpacking, and hunting.

26 The recreation settings include both designated recreation sites and dispersed recreation. Designated sites  
27 along the project roads include six day-use areas (Shoofly Interpretive Site, Water Wheel, First Crossing,  
28 Second Crossing, Third Crossing, Verde Glen), two developed campgrounds (Houston Mesa Horse Camp  
29 and Houston Mesa), one trailhead (Washington Park), two fishing areas (Dude Creek and East Verde  
30 River), three system trails (Pump Station Trail [296], Col. Devin Trail [290], and Railroad Tunnel Trail  
31 [390]), and a national recreation trail (the Highline Trail). A 17-mile portion of the Highline Trail is also  
32 part of the Arizona Trail, a more than 800-mile-long trail that stretches from Mexico to Utah (Arizona  
33 Trail Association 2010). Verde Glen is primarily a day-use area, although camping is permitted. Verde  
34 Glen is the only camping area in the project area that is located north of FR 64. Water Wheel, and First,  
35 Second, and Third crossings have recently been paved, and restroom facilities have been installed  
36 (personal communication, Chelsea Muise, Outdoor Recreation Planner, Tonto National Forest 2010).  
37 These four areas previously allowed camping; however, once improvements have been fully completed,  
38 these will be day-use areas only. The Shadow Rim Ranch Girl Scout campground is located just  
39 southwest of Washington Park.

40 The Washington Park trailhead is a popular access point to the Highline Trail. The nearest Wilderness  
41 Areas are the Mazatzal Wilderness (approximately 9 miles west) and the Hellsgate Wilderness

1 (approximately 8 miles south). The Water Wheel fire in September 2009 destroyed most of the TNF  
2 west of the Water Wheel day-use area/campground, south of the Whispering Pines subdivision.

3 The project is located within the Arizona Game Management Unit (GMU) 22. GMU 22 provides hunting  
4 opportunities for elk, mule and white-tailed deer, black bear, mountain lion, bighorn sheep, squirrel, and  
5 javelina.

6 Recreation opportunities in the project area include semi-primitive motorized and roaded natural  
7 (Appendix C).

## 8 **Environmental Consequences**

### 9 ***No-Action Alternative***

10 Under the No-Action Alternative, recreation settings, experiences, and opportunities would remain in  
11 their current state. There would be no direct, indirect, or cumulative effects on recreation.

### 12 ***Pipeline Alternatives***

#### 13 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

14 Construction of the pipeline has the potential to result in short-term, minor impacts to recreation as a  
15 result of construction activities that could restrict access to desired recreation experiences (such as driving  
16 for pleasure) or result in users taking a different route to their destination. The pipeline would be  
17 constructed in the road, which is defined as the actual road surface as well as the shoulders. During  
18 construction, Alternative 1 would not preclude the opportunity to access other recreational experiences  
19 available on surrounding forest areas, such as wildlife viewing, camping, horseback riding, and  
20 backpacking. Construction activities of Alternative 1 include temporary ground disturbances, potential  
21 road delays, and transportation of heavy equipment and materials. These actions would result in potential  
22 short-term restrictions to recreation sites that are included in the project area, including the developed  
23 sites at Shoofly Interpretive Site, Water Wheel, First Crossing, Second Crossing, Third Crossing, and  
24 Verde Glen. These construction activities are not compatible with recreation activities such as wildlife  
25 viewing and driving for pleasure; thus, Alternative 1 would result in local, minor, adverse, short-term  
26 impacts to recreation.

27 Alternative 1 would not impact the hunting opportunities available in GMU 22 since the project area is  
28 confined to the existing roadway, and hunting laws such as ARS 17-309 (a)(4) prohibit discharging  
29 firearms from 0.25 mile of any occupied residence unless permission is granted from the landowner.  
30 In addition, the existing law found at ARS 17-301 (b) prohibits discharging firearms upon, from, or into a  
31 road. As previously discussed in Chapter 2 under the proposed action, access to area roadways and the  
32 TNF would be maintained during construction. Therefore, Alternative 1 would not impact the hunting  
33 opportunities adjacent to the project in GMU 22.

34 During operation of the pipeline, under Alternative 1, there would not be impacts to recreation, as the  
35 pipeline would be located underground and would not preclude recreational experiences, settings, or  
36 opportunities. As described in the Water Resources – Water Quantity impact analysis, no anticipated loss  
37 in water quantity that could affect recreation such as fishing is anticipated.

38 Present and future maintenance of recreational use sites such as trailheads, campgrounds, and interpretive  
39 sites would cumulatively be impacted during construction, although these impacts would be minor.  
40 The impacts can be characterized as resulting in changes to access for certain recreational activities.

1 The recreational developments at First, Second, and Third crossings and Water Wheel are scheduled to be  
2 completed prior to implementing the proposed project. These developments would likely result in short-  
3 term, cumulative impacts during pipeline construction. These cumulative impacts would not result in  
4 measurable changes over current conditions. Short-term closures or delay at recreational developments  
5 would not occur during the operation and maintenance of the project.

## 6 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

7 Alternative 2 does not have any alignments located in areas designated as recreation sites. The land is  
8 either previously disturbed or undeveloped TNF land. Alternative 2 would have the same impacts to  
9 recreation as Alternative 1.

## 10 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

11 Alternative 3 includes a 7,500-foot-long alignment that departs from Houston Mesa Road. This alignment  
12 would avoid the Second and Third crossings' day-use areas along Houston Mesa Road. This alternative  
13 would decrease the impact to recreation, compared with Alternatives 1 and 2.

## 14 ***Water Treatment Plant Alternatives***

### 15 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

16 Alternative WTP1 would be located approximately 1,200 feet south of the Shoofly Interpretive Site.  
17 Construction of Alternative WTP1 would result in increases in noise and fugitive dust, which would  
18 temporarily impact the recreation experiences of Shoofly Interpretive Site visitors. Operation and  
19 maintenance of WTP1 would not likely result in impacts to recreation. WTP1 would not be visible from  
20 the interpretive site, and any operation noise associated with WTP1 would be contained within the plant.  
21 Thus, minor, local, short-term, adverse effects on recreation would result. No other direct or indirect  
22 effects are anticipated.

23 Cumulative impacts resulting from Alternative WTP1 would be similar to those described above under  
24 Pipeline Alternatives: present and future use and maintenance of project area roads could cumulatively  
25 result in changes or delays to access recreation sites. These impacts would not result in measurable  
26 changes over current conditions. However, none of the WTP sites occur on designated recreation sites.

### 27 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

28 Alternative WTP2 would be located approximately 0.5 mile southwest of the Shoofly Interpretive Site  
29 and would not result in direct, indirect, or cumulative impacts to the recreation experiences available at  
30 Shoofly Interpretive Site.

### 31 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

32 Alternative WTP3 would have the same direct, indirect, and cumulative effects on recreation as  
33 Alternative WTP2.

### 34 **ALTERNATIVE WTP4 – TAILRACE SITE**

35 Alternative WTP4 is located approximately 1,000 feet from the Washington Park trailhead, which  
36 accesses the Highline and Arizona trails and dispersed camping opportunities. Construction of WTP4  
37 would result in increases in noise and fugitive dust, which could impact the recreation experiences of  
38 Washington Park visitors. Operation and maintenance of WTP4 would result in minor impacts to

1 recreation because of the presence of a new development in an otherwise undeveloped area. Thus, minor,  
2 local, long-term, adverse effects on recreation would result. No other direct, indirect, or cumulative  
3 effects are anticipated, except those discussed under Alternative WTP1.

#### 4 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

5 Alternative WTP5 would have the same direct, indirect, and cumulative effects on recreation as  
6 Alternative WTP1.

#### 7 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

8 Alternative WTP6 would not be located in or near a designated recreation site. The site would include  
9 privately owned land located south of the Home Depot parking lot. No direct, indirect, or cumulative  
10 effects are anticipated.

#### 11 **ALTERNATIVE WTP7 – PROPOSED ACTION**

12 Alternative WTP7 would be located approximately 1 mile south of the Shoofly Interpretive Site and  
13 would not result in direct, indirect, or cumulative impacts to the recreation experiences available at  
14 Shoofly Interpretive Site.

#### 15 ***Infrastructure Tie-Ins***

16 Installation of buried pipelines for infrastructure tie-ins from the WTP to existing sewer and water  
17 distribution lines would generally result in temporary, short-term impacts to recreation, as described for  
18 Pipeline Alternative 1; however, the extent of the impacts cannot be determined until the final location of  
19 the WTP is chosen. No infrastructure tie-ins would be constructed for WTP4 because there are no  
20 NGCSD sewer and Town water distribution system lines in the immediate vicinity of WTP4. Temporary  
21 indirect impacts would only occur with WTP6 (through temporary traffic delays along SR 87 in the  
22 vicinity of the WTP), which is located on privately owned land outside the TNF. There would be no long-  
23 term impacts to recreation unless replacement of a tie-in or repairs are required.

#### 24 ***Mitigation***

- 25 • None.

## 26 **VISUAL QUALITY**

### 27 **Affected Environment**

28 The project area is within the TNF and near the base of the Mogollon Rim, a 7,000-foot-high, 200-mile-  
29 long escarpment. The Forest Service has established VQO settings for the TNF. These objectives are part  
30 of the Forest Service Visual Management System and landscape management. The VQO settings address  
31 degrees of acceptable alteration of the natural landscape and the public's concern for scenic quality, as  
32 well as diversity of natural features. The Forest Service has developed measurable standards or objectives  
33 for the visual management of NFS lands.

34 The scenic qualities of forest landscapes are valuable resources. The primary objectives of scenery  
35 management are to maintain natural appearances and to minimize alterations that contrast with the natural  
36 elements of forest landscapes. The TNF prescribes VQO settings for use during project planning and

1 implementation. Adherence to VQO settings and implementation of mitigation measures minimizes  
2 impacts that contrast with natural landscape characteristics, resulting in maintenance or enhancement of  
3 scenic qualities.

4 VQOs are represented by five categories: preservation, retention, partial retention, modification, and  
5 maximum modification. Table 3.6 shows the percentage of each VQO setting for each alternative within  
6 the project area. The three VQO settings present in the project area are retention, partial retention, and  
7 maximum modification.

8 **Table 3.6.** Percentage of Visual Quality Objective Classification Areas for each Alternative

VQO	Pipeline Alternative 1	Pipeline Alternative 2	Pipeline Alternative 3	WTP1	WTP2	WTP3	WTP4	WTP5	WTP6*	WTP7
Partial Retention	87%	90%	87%	100%	100%	100%	–	–	–	100%
Retention	12%	9%	12%	–	–	–	100%	100%	–	–
Maximum Modification	1%	1%	1%	–	–	–	–	–	–	–

9 \* Note: WTP6 is located on private land and therefore has no VQO classification.

10 Retention mandates that activities repeat the form, line, color, and texture that predominate in the  
11 characteristic landscape. Changes in size, amount, intensity, direction, pattern, etc., should not be evident.  
12 In terms of the allowable duration of impacts, this VQO setting requires that retention be accomplished  
13 either during operation or immediately thereafter. Portions of all three pipeline alternatives and  
14 Alternatives WTP 4 and WTP5 are designated retention lands.

15 Under partial retention, activities may repeat form, line, color, or texture common to the characteristic  
16 landscape, but changes in size, amount, intensity, direction, pattern, etc., must remain visually subordinate  
17 to the characteristic landscape. In terms of the allowable duration of impacts, the partial retention VQO  
18 setting requires meeting the objective as soon as possible after project completion or at a minimum within  
19 the first year. The majority of the three pipeline alternatives and Alternatives WTP1, WTP2, WTP3 and  
20 WTP7 are designated partial retention lands.

21 Finally, under maximum modification, management activities of vegetative and landform alterations may  
22 dominate the characteristic landscape. However, when viewed as background, the visual characteristics  
23 must be those that naturally occur within the surrounding area or character type. In terms of the allowable  
24 duration of impacts, the maximum modification VQO setting requires reduction of contrast within  
25 5 years. A very small portion (1%) of each of the pipeline alternatives is designated maximum  
26 modification lands.

27 The entire project is within the Upper Tonto Landscape Character type, as defined by the Visual  
28 Management System (Forest Service 1989). This landscape type occupies the northeastern one-third of  
29 the TNF, extending along the northern boundary to include a portion west of the Verde River valley.  
30 The overall appearance is of an extensive plateau dissected by canyons of moderate depth, creating buttes  
31 and mesas. Vegetation patterns include open grassland savannas, interior chaparral, oak-juniper  
32 woodlands, and ponderosa pine forest.

33 Currently, visual resources within the project area generally meet the prescribed VQO settings as defined  
34 in the Forest Plan. However, in localized areas, scenic integrity has been compromised by landscape  
35 alterations. This includes 1) the Houston Mesa Road corridor, 2) power line corridors, 3) some private  
36 property developments, and 4) wildfire scars. Table 3.7 lists critical viewpoints with high sensitivity

1 levels typical of the types of viewpoints that surround the project area and identifies the viewing distances  
2 that are important to consider in management of adjacent areas.

3 The dominant physiographic feature within and adjacent to the project area is the Mogollon Rim.  
4 The Rim is visible for many miles and provides strong focal orientation throughout the area.

5 **Table 3.7. Critical View Points and Important Viewing Distances**

Critical View Points	Viewing Location	Important Viewing Distance
Travel Routes	State highway routes	Foreground
	Forest roads	Foreground and middle ground
	Forest trails	Foreground
Use Areas	Trailheads	Foreground
	Campgrounds	Foreground, middle ground, and background
	Private property	Foreground, middle ground, and background
	Interpretive sites	Foreground and middle ground

## 6 Environmental Consequences

### 7 **No-Action Alternative**

8 Under the No-Action Alternative, current visual quality would remain in the current state. There would  
9 be no direct, indirect, or cumulative effects on visual quality.

### 10 **Pipeline Alternatives**

#### 11 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

12 Construction and operation of Alternative 1 would have limited ground disturbance and vegetation  
13 removal because the pipeline would follow the alignment of existing roads. No maintenance impacts  
14 would occur since existing roads would provide access. Construction, operation, and maintenance of the  
15 pipeline would not reduce the scenic integrity of the landscape and would adhere to the current VQO  
16 settings.

17 Direct and indirect impacts to visual quality under Alternative 1 would be short term, local, and adverse.

18 When Alternative 1 is cumulatively analyzed with other past actions such as roadway construction,  
19 private subdivision development, and the SRP powerhouse construction, impacts to visual quality would  
20 adhere to current VQO settings.

#### 21 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

22 The majority of the proposed pipeline in Alternative 2 would follow the alignment of existing roads.  
23 Visual impacts in these areas would have limited ground disturbance and vegetation removal, resulting in  
24 adherence to the current VQO settings.

25 In two locations, the pipeline would depart from the existing road alignment. These departures would  
26 cause significant localized ground disturbance and vegetation removal, which would reduce the scenic

1 integrity of the landscape. Adherence to the current VQO settings would require mitigation measures.  
2 No operation or maintenance impacts would occur since the Alternative 2 pipeline would be buried  
3 underground.

#### 4 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

5 The majority of the proposed pipeline in Alternative 3 would follow the alignment of existing roads.  
6 Visual impacts in these areas would have limited ground disturbance and vegetation removal, resulting in  
7 adherence to the current VQO settings.

8 A portion of the pipeline would depart from the existing road alignment to bypass the Second and Third  
9 crossings of the East Verde River. This alignment would cause extensive ground disturbance and  
10 vegetation removal because of the varied topography, which would reduce the scenic integrity of the  
11 landscape. Adherence to the current VQO settings would require mitigation measures. No maintenance  
12 impacts would occur since existing roads would provide access.

#### 13 ***Water Treatment Plant Alternatives***

##### 14 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

15 Alternative WTP1 would be within the VQO setting of partial retention and would be adjacent to and  
16 visible from Houston Mesa Road. WTP1 would not be visible from the Shoofly Interpretive Site. Minimal  
17 ground disturbance or vegetation removal would be required; however, the structure and facilities would  
18 not be subordinate to the characteristic landscape. Adherence to the current VQO setting would require  
19 mitigation measures.

20 Alternative WTP1 includes an approximately 2,100-foot-long proposed transmission line tie-in to existing  
21 infrastructure (see Figure 2.7, WTP1 layout). This would result in direct, long-term, adverse impacts to  
22 the current characteristic landscape. The 390-foot sewer line tie-in would also result in direct, adverse  
23 impacts to the current characteristic landscape, but this would be a short-term impact that would only  
24 occur during construction.

25 Maintenance of the WTP1 transmission line would require vegetation clearing, resulting in a long-term,  
26 adverse impact to visual quality.

27 The addition of a permanent structure and facilities to the partial retention VQO setting would result in a  
28 local, long-term, adverse impact to visual quality. The addition of WTP1 to the permanent landscape,  
29 when analyzed incrementally with other past, current, and future actions such as roadway construction,  
30 private subdivision development, and the SRP powerhouse construction, would result in a long-term  
31 cumulative impact.

##### 32 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

33 Alternative WTP2 would be within the VQO setting of partial retention and would be adjacent to and  
34 visible from Houston Mesa Road. WTP2 would also be visible from the adjacent Mesa del Caballo  
35 development. Minimal ground disturbance and some vegetation removal would be required. The structure  
36 and facilities would not be subordinate to the characteristic landscape. Adherence to the VQO would  
37 require mitigation measures. Additional mitigation measures would be required for impacts to the VQO  
38 settings of the Shoofly Interpretive Site.

39 Alternative WTP2 includes an approximately 2,100-foot-long proposed transmission line tie-in to existing  
40 infrastructure (see Figure 2.8, WTP2 layout). This would result in direct, long-term, adverse impacts to

1 the current characteristic landscape. The 333-foot sewer line tie-in would also result in direct, adverse  
2 impacts to the current characteristic landscape, but this would be a short-term impact that would only  
3 occur during construction.

4 Maintenance of the WTP2 transmission line would require vegetation clearing, resulting in a long-term,  
5 adverse impact to visual quality.

6 The addition of a permanent structure and facilities to the retention VQO setting would result in local,  
7 long-term, adverse, direct and indirect impacts to visual quality.

8 The addition of WTP2 to the permanent landscape, when analyzed incrementally with other past, current,  
9 and future actions such as roadway construction, private subdivision development, the Shoofly  
10 Interpretive Site, and the SRP powerhouse construction, would result in a long-term cumulative impact.

### 11 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

12 Alternative WTP3 would be within the VQO setting of partial retention and would be adjacent to and  
13 visible from Houston Mesa Road. Significant ground disturbance and vegetation removal would be  
14 required. The structure and facilities would not be subordinate to the characteristic landscape. Adherence  
15 to the current VQO setting would require mitigation measures.

16 Alternative WTP3 includes an approximately 1,000-foot-long proposed transmission line tie-in to existing  
17 infrastructure (see Figure 2.9, WTP3 layout). This would result in direct, long-term, adverse impacts to  
18 the current characteristic landscape. The 150-foot sewer line tie-in would also result in direct, adverse  
19 impacts to the current characteristic landscape, but this would be a short-term impact that would only  
20 occur during construction.

21 Maintenance of the WTP3 transmission line would require vegetation clearing, resulting in a long-term,  
22 adverse impact to visual quality.

23 The addition of WTP3 to the permanent landscape, when analyzed incrementally with other past, current,  
24 and future actions such as roadway construction and private subdivision development, would result in a  
25 long-term cumulative impact.

### 26 **ALTERNATIVE WTP4 – TAILRACE SITE**

27 Alternative WTP4 would be within the VQO setting of retention and would be adjacent to and visible  
28 from Houston Mesa Road. Major ground disturbance and significant vegetation removal would be  
29 required. Since the structure and facilities would be evident, adherence to the current VQO setting would  
30 require mitigation measures. The degree of contrast WTP4 would impose on the landscape would be  
31 greatest of all WTP alternatives because of the undeveloped and isolated location of the WTP4 site,  
32 compared with the other WTP alternatives.

33 Maintenance of the WTP4 transmission line would require vegetation clearing, resulting in a long-term,  
34 adverse impact to visual quality.

35 The addition of WTP4 to the permanent landscape, when analyzed incrementally with other past, current,  
36 and future actions, such as roadway construction, private subdivision development, and the SRP  
37 powerhouse construction, would result in a long-term cumulative impact.

## 1 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

2 Alternative WTP5 would include an addition of a permanent structure to the landscape within the VQO  
3 setting of retention. Alternative WTP5 would be within the VQO setting of retention and would be  
4 adjacent to and visible from SR 87. Minimal ground disturbance and significant vegetation removal  
5 would be required. Since the structure and facilities would be evident, adherence to the current VQO  
6 setting would require mitigation measures.

7 Alternative WTP5 includes an approximately 400-foot-long proposed transmission line tie-in to existing  
8 infrastructure (see Figure 2.10, WTP5 layout). This would result in direct, long-term, adverse impacts to  
9 the current characteristic landscape. The 800-foot sewer line tie-in would also result in direct, adverse  
10 impacts to the current characteristic landscape, but this would be a short-term impact that would only  
11 occur during construction.

12 Maintenance of the WTP5 transmission line would require vegetation clearing, resulting in a long-term,  
13 adverse impact to visual quality.

14 The addition of WTP5 to the permanent landscape, when analyzed incrementally with other past, current,  
15 and future actions such as roadway construction and private subdivision development, would result in a  
16 long-term cumulative impact.

## 17 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

18 Alternative WTP6 is not within a designated VQO setting because it is on privately owned land.  
19 The construction of WTP6 would occur in an area where adjacent lands have previously been developed  
20 with residential and commercial structures. The construction of WTP6 would not affect existing VQOs.

21 Maintenance of the WTP6 transmission line would require vegetation clearing on NFS land, resulting in a  
22 long-term, adverse impact to visual quality.

## 23 **ALTERNATIVE WTP7 – PROPOSED ACTION**

24 Alternative WTP7 would be within the VQO setting of partial retention and would be adjacent to and  
25 visible from Houston Mesa Road. Significant ground disturbance and vegetation removal would be  
26 required. The structure and facilities would not be subordinate to the characteristic landscape. Adherence  
27 to the current VQO setting would require mitigation measures.

28 Alternative WTP7 includes an approximately 1,600-foot-long proposed transmission line tie-in to existing  
29 infrastructure (see Figure 2.13, WTP7 layout). This would result in direct, long-term, adverse impacts to  
30 the current characteristic landscape.

31 Maintenance of the WTP7 transmission line would require vegetation clearing, resulting in a long-term,  
32 adverse impact to visual quality.

33 The addition of WTP7 to the permanent landscape, when analyzed incrementally with other past, current,  
34 and future actions such as roadway construction and private subdivision development, would result in a  
35 long-term cumulative impact.

## 36 **Infrastructure Tie-Ins**

37 It is anticipated all infrastructure tie-ins would be buried within previously disturbed existing roadways.  
38 Construction activities would occur over an 18- to 36-month period and, once completed, the facilities

1 would not alter the existing landscape characteristics. This aspect of the proposed project would comply  
2 with the applicable VQOs.

### 3 **Mitigation**

- 4 • Paint: all culverts that are visible to the public would be painted with a color that matches the  
5 native soil.
- 6 • All materials and building finishes would blend with the surrounding natural landscape.
- 7 • All water storage tanks would be painted a color that matches the surrounding natural landscape.
- 8 • Erosion control: temporary and permanent erosion control measures would be incorporated.
- 9 • After use, staging areas would be obliterated and put back into as near as natural conditions as  
10 possible. Obliteration would include roughening, re-contouring, and seeding.
- 11 • Fencing surrounding the WTP would have a dull, non-reflective finish.

## 12 **WATER RESOURCES**

### 13 **Affected Environment**

14 The project area lies within the Verde River Surface Water Basin (watershed) and includes the East Verde  
15 River, Chase Creek, and several other small washes. The East Verde River, at the project area, drains  
16 approximately 272 square miles south of the Mogollon Rim, including portions of Diamond Rim,  
17 Houston Mesa, the Brody Hills, and the Mogollon Rim (ADWR 2009). The project area lies specifically  
18 within the Verde Canyon sub-basin of the Verde Basin (ADWR 2009).

### 19 **Water Quantity**

20 The East Verde River flows mostly perennially within the project area. Based on data developed by  
21 USGS, the C-aquifer is considered to be the source of most flow that discharges from the underlying  
22 limestone aquifer and becomes surface flow in the East Verde River (Reclamation 2008).

23 Construction of the C.C. Cragin Dam (originally called Blue Ridge Dam) was completed in 1965 by  
24 Phelps Dodge Morenci, Inc. The reservoir collects runoff from East Clear Creek, which is a tributary to  
25 the Little Colorado River. The surface water stored in and diverted from the reservoir is runoff from the  
26 Little Colorado River watershed, which is completely separate from the Gila River watershed, within  
27 which the East Verde River and the project area are located.

28 There is currently one operational USGS flow gage located in the immediate project area. USGS Gage  
29 9507580 (East Verde River Diversion from East Clear Creek near Pine, Arizona) is located at the outfall  
30 from the C.C. Cragin Pipeline into the East Verde River and measures only the diversions made from  
31 C.C. Cragin Reservoir. It has been in operation since October 21, 1965. In addition, there are two  
32 previously operational gages on the East Verde River near the project area; these gages were operated  
33 during the 1960s specifically in order to assess flow in the East Verde River before and after diversions  
34 from East Clear Creek began to be discharged into the river. USGS Gage 9507600 (East Verde River near  
35 Pine, Arizona) collected data from October 1961 until September 1971; it is located about 2 miles  
36 downstream of the proposed pipeline inlet, just downstream of the Verde Glen community. USGS Gage  
37 9507950 (East Verde River near Payson, Arizona) collected data from August 1961 until September  
38 1965; it is located approximately 5 miles downstream of the SR 87 Bridge. One additional operational

1 stream gage is located much farther downstream near the confluence with the Verde River. USGS Gage  
 2 9507980 (East Verde River near Childs, Arizona) has collected data since September 1, 1961 (USGS  
 3 2011).

4 The short period of record (1961–1971) from the flow gage located 2 miles downstream of the diversion  
 5 reflects data both before and after diversions began from Blue Ridge Reservoir (now C.C. Cragin  
 6 Reservoir). It provides about 5 years' worth of discharge data before Phelps Dodge began diverting flows  
 7 into the East Verde River. Between October 1961 and September 1965, monthly mean flows at this gage  
 8 ranged between 0.04 and 16.2 cubic feet per second (cfs), with the highest flows occurring in April and  
 9 May. Daily mean discharges ranged between a minimum of 0.0 cfs (July and August 1962; July 1963 and  
 10 1964) and a maximum of 72 cfs (January 1965). Over this period (1961–1965), the overall average flow  
 11 was 1.8 cfs. During the same period, monthly mean flows in the East Verde River near Payson ranged  
 12 between 0.12 and 276.3 cfs, with the highest flows occurring in March and April. Daily mean discharges  
 13 near Payson ranged between a minimum of 0.1 cfs (August through November 1962; June through  
 14 August 1963; July through September 1964) and a maximum of 2,540 cfs (August 1963). Over the period  
 15 (1961–1965), the overall average flow near Payson was 24.1 cfs (USGS 2011).

16 The Dam creating Blue Ridge Reservoir was constructed as a mechanism for Phelps Dodge Corporation  
 17 to exchange water rights with SRP. Upon completion, water was collected in the reservoir and diverted  
 18 over the Mogollon Rim into the Verde River watershed, specifically into the East Verde River. This water  
 19 was not consumptively used by the SRP on the East Verde River but was allowed to flow downstream for  
 20 storage and use elsewhere in the Verde and Salt river system. In return, Phelps Dodge obtained rights to  
 21 divert water from the Black River, a tributary to the Salt River, for use in mining operations. The priority  
 22 date of the original right to divert water from the reservoir into the East Verde River is 1957, with  
 23 diversions actually beginning in the mid-1960s and continuing to date. The dam, reservoir, and water  
 24 right were transferred to the SRP in 2007 as part of the AWSA (ADWR 2010b). Under the C.C. Cragin  
 25 water right, up to an average of 11,000 af per year may be diverted, depending on the availability of water  
 26 in the reservoir. USGS gage data for Cragin diversions to the East Verde River are available from October  
 27 21, 1965, to the present.<sup>4</sup> SRP records, which include some adjustments to the USGS data, of historical  
 28 deliveries of water to the East Verde for 1966–1990 are provided in Table 3.8.

29

**Table 3.8.** Historical East Verde River Deliveries

Calendar Year	East Verde River Deliveries (af)
1966	11,310
1967	9,390
1968	14,682
1969	15,039
1970	13,655
1971	8,795
1972	7,134
1973	10,998
1974	7,072
1975	13,189
1976	15,733
1977	2,652

<sup>4</sup> USGS Gage 09507580, available at: [http://waterdata.usgs.gov/az/nwis/uv/?site\\_no=09507580&PARAMeter\\_cd=00065,00060](http://waterdata.usgs.gov/az/nwis/uv/?site_no=09507580&PARAMeter_cd=00065,00060).

1  
2**Table 3.8.** Historical East Verde River Deliveries  
(Continued)

Calendar Year	East Verde River Deliveries (af)
1978	10,156
1979	10,332
1980	7,776
1981	5,615
1982	11,096
1983	6,685
1984	10,650
1985	4,247
1986	9,669
1987	10,118
1988	10,012
1989	8,927
1990	2,962
<b>Average</b>	<b>9,516</b>

3 From 1966 through 1990, annual diversions ranged between 2,652 and 15,733 af, with the average annual  
4 delivery over this period being about 9,516 af.<sup>5</sup> The corresponding average diversion rate was about  
5 13 cfs and has ranged from 0 to 34 cfs (USGS 2011). These diversions typically occur from March  
6 through November but also have occurred during the other months on occasion. The augmented flow in  
7 the East Verde River resulting from these diversions has been intermittent and highly variable in volume.  
8 The water that would be used by the town of Payson would be diverted into the proposed pipeline prior to  
9 entering the East Verde River.

10 In the upper reaches of the watershed, the impact of diverted flows on the flow of the East Verde River is  
11 quite large, augmenting average, natural flows (as best we know them) by about 700% to 800%, but was  
12 within the natural variability of stream flow. However, the relative impact is greatly reduced farther  
13 downstream near Payson, reflecting only about a 40% to 55% augmentation to natural flows.

14 The Forest Service has a certificate of water right for instream flow maintenance on the East Verde River  
15 for 2,894 af per year, with a priority date of November 26, 1985 (33-090310). The water right specifies  
16 flow rates (in cfs) by month as measured at the SR 87 bridge. Certificated flows range from 1.7 cfs in  
17 June to 7 cfs in November.

18 The purpose of this non-consumptive, in situ water right is for the beneficial use of wildlife, including  
19 fish, and recreation. The certificate of water right evidences a perfected surface water right that is superior  
20 to all other surface water rights with a more recent priority date but is junior to all rights with an earlier  
21 (older) priority date. This instream flow right is specifically “based on natural flows excluding imported  
22 water” (ADWR 2003). It is important to note that surface water rights and claims on the East Verde River  
23 watershed have not yet been adjudicated; as such, the amount and priority dates of all of these surface

<sup>5</sup> Deliveries since 1990 have not been included because they have been inconsistent; the inconsistency is the result of restrictions on deliveries from construction of Modified Roosevelt Dam in the early 1990s; reductions resulting from the San Carlos Apache Tribe water settlement in 1996; and testing and repairs to the system by SRP since 2005. The deliveries between 1966 and 1990 are anticipated to be similar to current and future deliveries.

1 water rights and statements of claimants, in addition to all other water rights on this watershed, have not  
2 yet been confirmed by the courts.

3 According to the ADWR well registry, there are approximately 116 registered wells adjacent to the  
4 project area. These wells are primarily located in or near the communities that occur adjacent or whose  
5 access is from existing roadway alignments along the project area, including Mesa del Caballo, Freedom  
6 Acres, Beaver Valley Estates, Verde Glen, Wonder Valley, Rim Trail Estates, and Whispering Pines.  
7 The depth to groundwater on these registered wells ranges from 10 to 700 feet. The Town owns seven of  
8 these wells; the TNF, private residents, water districts, and landowner associations comprise the other  
9 well owners (ADWR 2010a).

10 The Town's municipal water system currently relies on groundwater from a regional aquifer composed  
11 primarily of decomposed and fractured granite. Groundwater is extracted from the aquifer by wells  
12 located throughout the Town's service area and delivered directly into the potable water distribution  
13 system.

14 The system includes 42 water production wells, 11 water storage tanks, and more than 200 miles of  
15 pipeline to supply water to approximately 7,800 public water system connections. Most of the Town's  
16 wells are relatively shallow (300–500 feet below land surface), with some deeper wells approaching  
17 1,000 feet. There also are about 300 private wells that operate within the town of Payson but are not  
18 connected to the Payson Water Department system (Reclamation 2008). Water levels within the aquifer  
19 fluctuate by season and from year to year, depending on the amount of precipitation recharge received by  
20 the aquifer and the amount of water used by the Town; these fluctuations can be as great as 50 feet,  
21 depending on local conditions.

## 22 **Water Quality**

23 A study on the total maximum daily load of various pollutants revealed that the lower portion of the East  
24 Verde River (approximately from the SR 87 bridge (American Gulch) to the Verde River) is impaired as a  
25 domestic drinking water source by high levels of arsenic and boron. The ADEQ notes that exceedances  
26 are more likely to occur during low-flow periods, particularly when flow is below 5 cfs, which indicates  
27 that groundwater is likely the major contributing factor (ADEQ 2009).

28 High levels of selenium were also discovered in the portion of the East Verde River from Ellison Creek  
29 (near Second Crossing) to the SR 87 bridge; these do not pose a risk to human health but may represent a  
30 risk to aquatic life (ADEQ 2007). It should be noted that unlike the exceedances of arsenic and boron, the  
31 selenium exceedances noted by ADEQ are based on only a single sample because of problems with  
32 laboratory detection limits. Therefore, the likely source of selenium is unknown (EPA 2011).

33 The Town has been collecting surface water quality samples from Cragin Reservoir since 2005. Many  
34 samples have been analyzed for consideration of both drinking water quality parameters and filtration  
35 needs. Cragin water is of high quality and contains very low dissolved minerals content (total dissolved  
36 solids of about 40–60 mg/L) and no unusual compounds. With respect to arsenic, boron, and selenium,  
37 Cragin surface water does not contain these constituents above laboratory detection limits (personal  
38 communication, Mike Ploughe, Town of Payson Hydrologist 2011).

39 Raw (untreated) Cragin surface water quality data indicate a potential need for pretreatment for reduction  
40 of total organic carbon, iron, and aluminum, combined with typical surface water treatment and filtration  
41 needs, including disinfection, removal of algae and related protozoa, removal of total suspended solids  
42 particulates (approximately 14 mg/L, 60% of which are 1 to 15 micron), and control of trihalomethanes.  
43 Additionally, data collected indicate the water may be somewhat corrosive and will require lime addition

1 (or similar) to buffer the cold (4°C–6°C) high-altitude surface water in order to prevent dissolution of any  
2 deposits that have built up within distribution system and home piping and to prevent dissolution of  
3 aquifer material during recharge. Additional sampling and testing, to occur in 2011, will further refine the  
4 desired treatment/filtration process. However, microfiltration, in combination with standard pre- and post-  
5 treatment polishing methods, is likely to be recommended. Thus, resultant filtrate from the proposed WTP  
6 will meet all primary and secondary drinking water quality standards for surface water sources, as  
7 established by EPA and ADEQ.

8 The Town performs an annual Water Quality Survey of its groundwater, as required by ADEQ.  
9 The Town's drinking water is in full compliance with all drinking water standards established by EPA  
10 and ADEQ, i.e., it meets primary and secondary drinking water quality standards (Town 2010).

## 11 **Environmental Consequences**

### 12 ***No-Action Alternative***

13 As noted in Chapter 2, under the No-Action Alternative, the water pipeline and WTP would not be  
14 constructed and the Forest Service would not issue a special use permit to the Town. The Town would  
15 still hold a perfected water right of 3,000 af at C.C. Cragin Reservoir and would work with SRP to  
16 determine other methods to deliver and use the water.

17 While the Town and SRP work toward determining other methods to deliver and use the Town's allotted  
18 Cragin water, the existing groundwater well network would continue to operate as it does currently.  
19 Based on a recent appraisal level study, the Town is anticipated to pursue some mix of additional  
20 conservation, development of local groundwater aquifers through additional wells (within the constraints  
21 of SRP/Town agreements), water hauling, rainwater harvesting, reclaimed reuse, and growth management  
22 in the absence of the proposed action (Reclamation 2008).

### 23 ***Pipeline Alternatives***

#### 24 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

##### 25 **Water Quantity**

26 Under Alternative 1, the Town's diversion of up to 3,000 af per year on average from C.C. Cragin  
27 Reservoir would enter the proposed pipeline after SRP's diversion over the Mogollon Rim but prior to  
28 that water's entering the East Verde River. The amount of stored water in the reservoir is highly variable  
29 and dependent on precipitation, snowfall, and runoff. The amount of water actually delivered to the  
30 Town, consistent with its water right and agreements with SRP, would be a maximum of 3,500 af per year  
31 and up to 3,000 af on average annually, depending on storage levels and Town demand. Each spring, SRP  
32 would calculate the amount of total stored water in C.C. Cragin Reservoir that would be available for  
33 diversion to the Town, which is about 27% of the Reservoir's active storage volume. In the event of  
34 shortages, the available water is divided proportionately between SRP and the Town in accordance with  
35 written agreements. Future delivery of the additional 500 af average annual supply made available by the  
36 AWSA to other users, if effectuated, would likely be apportioned in a similar manner. The remainder of  
37 the stored water in C.C. Cragin Reservoir would continue to be discharged into the East Verde River by  
38 SRP and allowed to flow downstream for storage and use elsewhere in the Verde and Salt river system.  
39 The Town's diversion would reduce the volume of water discharged from the C.C. Cragin pipeline into  
40 the East Verde River by up to 4.84 cfs. The remaining discharge from the pipeline would continue to  
41 augment flows in the East Verde River by flow rates that remain within the historic range of flows

1 occurring in this portion of the East Verde River since 1966, when Phelps Dodge diversions commenced.  
2 It would not affect the natural base flows of the East Verde River. Physically, it is unlikely that the overall  
3 flow in the East Verde River or its riparian habitat would be substantially affected by the project, as 68%  
4 of whatever water is diverted from the C.C. Cragin Reservoir (about 6,500 af out of 9,500 af per year on  
5 average) would continue to be discharged into the East Verde River seasonally and would be available to  
6 support existing wildlife, fish, and recreation. Furthermore, the project would not affect the Verde River  
7 or its riparian habitat because the water diverted from C.C. Cragin Reservoir represents a small proportion  
8 (5%) of the water the East Verde River average flow into the Verde River. On average (1970–2010),  
9 50,413 af per year passes a USGS gauging station (#09507980) before the East Verde River empties into  
10 the Verde River. If one conservatively assumes that 100% of the 3,500 af reaches the point before it  
11 empties into the Verde River, the diversion only consists of 5% of the lower reach of the East Verde River  
12 average annual runoff. Nonetheless, the risk of adverse impacts to riparian vegetation along the East  
13 Verde and Verde River is slightly increased due to the proposed project's 17% decrease in the water  
14 quantity that is currently released into the East Verde River.

15 The proposed diversion of up to 3,500 af of water per year that previously had been released to the East  
16 Verde River would not have any impact on downstream water right holders, regardless of the priority date  
17 of the Town's water right or the priority date of any downstream water rights. While the diverted water  
18 has been present in the East Verde River since approximately 1965, the water entering the East Verde is  
19 not natural to the system, having been diverted from a separate watershed. The release of the water to the  
20 East Verde has been discretionary on the part of the water rights holder (Phelps Dodge and SRP) and, as  
21 such it is not, and never has been, appropriable by downstream water users.

22 The in-stream flow right to East Verde flows held by the TNF is not a consumptive water right, but rather  
23 a water right based on the presence of flow in the East Verde River. Although not yet adjudicated, the  
24 priority date of this water right (1985) would be inferior to the priority date of the diverted water (1957).  
25 Furthermore, the in-stream flow right specifically excludes imported water flowing in the East Verde.  
26 From a legal or regulatory perspective, the change in East Verde flow would likely have no effect on  
27 the in-stream flow right. Physically, it is unlikely that the overall flow in the East Verde would be  
28 substantially affected by the proposed diversion, as 68% of whatever water is diverted from the Reservoir  
29 (about 6,500 af out of 9,500 af per year on average) would continue to be discharged into the East Verde  
30 River seasonally and would be available to support existing wildlife, fish, and recreation. As noted above,  
31 the remaining flow would fall within the historic range of flow occurring in this portion of the East Verde  
32 River.

33 In terms of cumulative impacts, future connections to the Cragin pipeline by other northern Gila County  
34 communities could cumulatively result in impacts to water resources. As previously discussed, under the  
35 AWSA, up to 500 af of surface water per calendar year on average from the C.C. Cragin Reservoir are  
36 available to other northern Gila County communities. The proposed Town pipeline would be designed to  
37 allow surrounding communities to have the opportunity to establish connections along the proposed  
38 pipeline in the future, once the communities have secured a water right from the SRP and ADWR has  
39 approved transfer of water rights. The associated cumulative impacts of the additional 500 af would be  
40 limited to those as described above for direct and indirect impacts and would be considered minor, long-  
41 term, adverse impacts.

42 In addition, there would be cumulative impacts with respect to recent fires in the region (see Appendix  
43 A). The overall effect of wildfires on the watershed tends to increase runoff (particularly peak flows) and  
44 sediment movement in the short term, with a gradual return to pre-fire flow conditions. Cumulative  
45 impacts associated with these fires would be considered minor and short term. Other reasonably  
46 foreseeable activities described in Appendix A would involve surface disturbance, but in the context of

1 the overall watershed, this would be relatively minor and unlikely to contribute to changes in water  
2 quantity.

### 3 **Water Quality**

4 Construction and ground disturbance have the potential to release contaminants into the East Verde River  
5 or its tributaries through stormwater runoff and erosion. Ground disturbance associated with the First,  
6 Second, and Third crossings, in particular, could result in the release of contaminants into the East Verde  
7 River. In addition, there are an estimated 70+ tributary crossings (primarily dry) that would occur.  
8 However, the project would be required to comply with conditions of an AZPDES Construction General  
9 Permit, which would include the use of BMPs and structural sediment control measures to reduce the risk  
10 of movement of sediment into surface waters.

11 The AZPDES permit requirements include monitoring the effectiveness of control measures and  
12 replacement of control measures in the event they are damaged or their capacity to retain sediment is  
13 exceeded. As a result of implementing BMPs and mitigation in the AZPDES permit, and construction and  
14 sediment control techniques, it is unlikely that construction of the pipeline would have any significant  
15 impact on water quality in the East Verde River or its tributaries, nor would construction of the pipeline  
16 increase loads of arsenic and boron in the river from discharge of sediment, impacting the total maximum  
17 daily load of these constituents.

18 The designation of portions of the East Verde River as impaired is based on water sampling conducted  
19 from approximately 1990 through 2004 by ADEQ. Impairment for selenium in the reach of the East  
20 Verde from approximately Second Crossing to the SR 87 Bridge is based on limited data (a single sample  
21 only); therefore, no conclusions have been drawn regarding the likely source of selenium exceedances.  
22 Impairment for arsenic and boron in the reach of the East Verde from approximately the SR 87 bridge to  
23 the confluence with the Verde River is based on extensive sampling and is believed to result from  
24 groundwater inflow along this reach. During the period of sampling, the diversions from Cragin Reservoir  
25 were part of the flows in the East Verde River. The Cragin Reservoir water contains very low levels of  
26 these constituents (below laboratory detection limits); therefore, there is the potential that the Cragin  
27 flows act to dilute these constituents. If so, removal of a portion of the flows into the proposed pipeline  
28 could reduce this dilution and effectively increase levels of arsenic and boron.

29 During the period from 1961–1965, average flows in the lower impaired reach of the East Verde ranged  
30 from 24 cfs (near Payson) to 33 cfs (near Childs) (USGS 2011). The average discharge from Cragin is  
31 approximately 13 cfs, which represents an increase of 40% to 55% over the natural flows (as best we  
32 know them). The proposed pipeline would reduce this average flow by approximately 5 cfs; as a result,  
33 the increase over natural flows in the impaired stream reach would be less than experienced historically,  
34 representing an increase of 25% to 35%. These are average values only and based on limited historic flow  
35 records; the exact amount of dilution under various seasonal flow conditions is not known, especially  
36 during periods of low flow, when the impairment is most likely to occur.

37 With respect to arsenic, the dilution could have an effect on increasing concentrations in the East Verde  
38 River; however, the exceedances of arsenic are significantly higher than the current regulatory standard  
39 of 10 micrograms per liter ( $\mu\text{g/L}$ ) for drinking water. At the sampling point near the confluence with the  
40 Verde River, only four of 30 water quality samples were below the current standard of 10  $\mu\text{g/L}$  for  
41 drinking water. The maximum concentration observed was 394  $\mu\text{g/L}$ , and the average concentration of  
42 the samples that exceeded the standard was 105  $\mu\text{g/L}$ , more than 10 times the standard (EPA 2011).  
43 The effect of less dilution could change the concentrations of arsenic but would likely not substantially  
44 affect the impairment designation.

1 With respect to boron, the exceedances of the regulatory standard are not as extensive as those of arsenic.  
2 At the sampling point near the confluence with the Verde River, three of 29 water quality samples  
3 exceeded the current standard of 1,400 µg/L for total boron. The maximum concentration observed was  
4 1,890 µg/L, and the average concentration of the samples that exceeded the standard was 1,750 µg/L,  
5 which is about 25% higher than the regulatory standard (EPA 2011). The effect of less dilution could  
6 change the concentrations of boron and may exacerbate the level of impairment of the East Verde River.

7 In terms of cumulative effects, the recent fires on the watershed may contribute to short-term increased  
8 sediment and nutrient loading in the East Verde River, with a gradual return to pre-fire conditions. Other  
9 reasonably foreseeable activities described in Appendix A would involve surface disturbance, which  
10 could increase sediment concentrations in surface water. In the context of the overall watershed, and  
11 considering the requirement that any larger projects (over 1 acre) would likely comply with an AZPDES  
12 Construction General Permit, the effect would be relatively minor and unlikely to contribute to changes in  
13 water quality.

14 In summary, Pipeline Alternative 1 would result in negligible to minor, localized, long-term, adverse,  
15 direct and indirect impacts on water quality. Pipeline Alternative 1 would result in minor, long-term,  
16 adverse impacts on water quantity.

## 17 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

18 Construction of Pipeline Alternative 2 would include ground disturbance, with the potential to impact  
19 water quality at the north end of the proposed pipeline (along the west bank of the East Verde River at  
20 Rim Trails), as well as at the First, Second, and Third crossings. However, implementation of BMPs and  
21 mitigation in the AZPDES permit, along with general construction and sediment control techniques, it is  
22 unlikely that construction of the pipeline would have any significant impact on water quality in the East  
23 Verde River.

24 Pipeline Alternative 2 would have the same direct, indirect, and cumulative effects on water resources as  
25 Pipeline Alternative 1.

## 26 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

27 Construction of Pipeline Alternative 3 would include ground disturbance, with the potential to impact  
28 water quality at the First Crossing. Pipeline Alternative 3 includes a 7,500-foot-long alignment that  
29 avoids the Second and Third crossings. Pipeline Alternative 3 would have the same direct, indirect, and  
30 cumulative effects on water resources as Pipeline Alternatives 1 and 2.

## 31 ***Water Treatment Plant Alternatives***

### 32 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

33 Alternative WTP1 is not located near the East Verde River or of any of its tributaries. Construction would  
34 require compliance with an AZPDES Construction General Permit, and similar BMPs and structural  
35 controls to prevent erosion and movement of sediment into stormwater would be implemented. Therefore,  
36 although the proposed WTP is located within the Verde River Surface Water Basin, no direct, indirect, or  
37 cumulative effects on water quality are anticipated.

38 Waste would be generated during operation of the WTP, resulting from backwash associated with the  
39 microfiltration process of the proposed WTP. Waste discharged from the WTP would be delivered to, and  
40 treated at, the existing NGCSD WWTP. The estimated WTP discharge is unknown, pending additional  
41 modeling. The NGCSD WWTP has a design capacity of 2 million gallons per day; existing flow averages

1 1.3 million gallons per day. The Town would consult with NGCSD to ensure that any waste destined for  
2 the NGCSD WWTP would not exceed the WWTP capacity. No direct, indirect, or cumulative impacts to  
3 water quantity are expected.

4 In terms of cumulative impacts, the population in Payson is anticipated to reach more than 26,000 by  
5 2040 (Arizona Department of Commerce [ADOC] 2006), a 52% increase over the current 2008  
6 population of 17,000. Additional population growth, and associated development, could result in an  
7 additional load on the wastewater treatment infrastructure that could cumulatively result in increased  
8 demand on the existing NGCSD, with the capacity needed for water treatment plant discharge.

## 9 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

10 Alternative WTP2 would have the same direct, indirect, and cumulative effects on water quantity as  
11 Alternative WTP1.

12 Alternative WTP2 is not located near the East Verde River or of any of its tributaries. Although the  
13 proposed WTP is located within the Verde River Surface Water Basin, no direct, indirect, or cumulative  
14 effects on water quality are anticipated.

## 15 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

16 Alternative WTP3 would have the same direct, indirect, and cumulative effects on water quantity as  
17 Alternative WTP1.

18 Alternative WTP3 is not located near the East Verde River or of any of its tributaries. Although the  
19 proposed WTP is located within the Verde River Surface Water Basin, no direct, indirect, or cumulative  
20 effects on water quality are anticipated.

## 21 **ALTERNATIVE WTP4 – TAILRACE SITE**

22 Alternative WTP4 would have the same direct, indirect, and cumulative effects on water quantity as  
23 Alternative WTP1.

24 Alternative WTP4 is located adjacent to the west bank of the East Verde River. As described under  
25 Pipeline Alternative 1, construction of the WTP has the potential to release contaminants into the East  
26 Verde River or its tributaries through stormwater runoff and erosion. However, requirements and BMPs  
27 in the AZPDES Construction General Permit are designed to minimize impacts to water quality. Thus,  
28 construction of the WTP would result in negligible, localized, short-term, adverse impacts to water  
29 quality.

30 However, unlike the other WTP sites, WTP4 has no ability to connect to a sanitary sewer system.  
31 Therefore, backwash and cleaning discharges from the WTP would need to be hauled out twice a month  
32 by truck. Therefore approximately two 36-mile round-trips per month would occur as a result of  
33 transporting by truck the stored waste discharge from the WTP4 to the NGCSD WWTP. Thus, operation  
34 of the WTP4 would not result in significant, long-term, adverse impacts to water quality.

## 35 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

36 Alternative WTP5 would have the same direct, indirect, and cumulative effects on water quantity as  
37 Alternative WTP1.

1 Alternative WTP5 is not located near the East Verde River or of any of its tributaries. Although the  
2 proposed WTP is located within the Verde River Surface Water Basin, no direct, indirect, or cumulative  
3 effects on water quality are anticipated.

#### 4 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

5 Alternative WTP6 would have the same direct, indirect, and cumulative effects on water quantity as  
6 Alternative WTP1.

7 Alternative WTP6 is not located near the East Verde River or of any of its tributaries. Although the  
8 proposed WTP is located within the Verde River Surface Water Basin, no direct, indirect, or cumulative  
9 effects on water quality are anticipated.

#### 10 **ALTERNATIVE WTP7 – PROPOSED ACTION**

11 Alternative WTP7 would have the same direct, indirect, and cumulative effects on water quantity as  
12 Alternative WTP1.

13 Alternative WTP7 is not located near the East Verde River or of any of its tributaries. Although the  
14 proposed WTP is located within the Verde River Surface Water Basin, no direct, indirect, or cumulative  
15 effects on water quality are anticipated.

#### 16 **INFRASTRUCTURE TIE-IN**

17 No water resources would be impacted by construction of the infrastructure tie-ins required to connect the  
18 WTP to the existing sewer and water distribution systems. Tie-in to the existing infrastructure would not  
19 result in a change to the current water availability or quantity. It is anticipated that installation of these tie-  
20 ins would be wholly contained within existing roadways and would not require new land surface  
21 disturbance that would impact water quality. Implementation of BMPs and mitigation described for  
22 pipeline construction would reduce water quality impacts. It is anticipated that construction of these tie-  
23 ins would not occur at the same time as pipeline and WTP construction and thus would not result in  
24 compounding impacts to water quality.

#### 25 **WATER STORAGE**

26 Designation of ASR wells and their use for water storage and recovery, in general, would result in a rise  
27 in water levels during recharge in the near vicinity of the ASR well, followed by a decrease back to  
28 “normal” levels once the water is recovered. Private wells in the area likely already experience a great  
29 deal of natural fluctuation as a result of aquifer use and natural recharge conditions. Use of ASR wells  
30 could result in some private wells likely seeing water levels rise and fall, but in general, water levels  
31 should not significantly decrease below water levels currently and historically observed. Because the  
32 water would be treated, or buffered, there are no anticipated impacts to aquifer water quality, aquifer  
33 materials, or the distribution system from use of ASR wells. Specific impacts cannot be determined until  
34 the final location of these wells—and the proximity to other existing wells—is known. Potential impacts  
35 to neighboring wells will be taken into consideration in identifying wells to be designated as ASR wells.

#### 36 **Mitigation**

- 37 • Implementation of a SWPPP and BMPs to reduce erosion and sediment transport will be  
38 required.

# 1 WILDLIFE

## 2 Affected Environment

3 A number of game species and furbearers are found in the project vicinity. Mule deer, white-tailed deer,  
4 javelina, small-game mammals such as squirrels and jackrabbits, Gambel's quail, waterfowl such as  
5 ducks and geese, and other migratory game birds are common throughout the area. Bobcat, mountain lion,  
6 coyote, and black bear are also found in this area.

7 Only species listed on the USFWS ESA species list for Gila County were considered for this analysis:  
8 18 wildlife (fish, birds, mammals, amphibians and reptiles) species are listed (Appendix D). The 18  
9 species include six threatened species, eight endangered species, and four candidate species. Further  
10 classification reveals that these 18 species consist of nine fish, five birds, two mammals, one amphibian,  
11 and one reptile (USFWS 2010). Although candidate species do not receive regulatory protection under the  
12 ESA, they are analyzed in this EA in the event that they become officially listed prior to construction of  
13 this proposed project.

14 This analysis includes a description of the existing conditions for wildlife, not a determination of effect  
15 under Section 7 and 9 of the ESA. A biological assessment (BA) was prepared on the proposed action and  
16 informal consultation under the ESA with the USFWS was concluded on October 11, 2011 resulting in  
17 concurrence.

18 EO 131186 places an emphasis on conservation of migratory birds that are protected under the Migratory  
19 Bird Treaty Act. To date, there has been no regional or TNF policy developed to provide guidance on  
20 how to incorporate migratory birds into NEPA analysis. Advice from the Regional Office is to analyze  
21 effects in the following manner: 1) effects on Species of Concern listed by Partners in Flight; 2) effects on  
22 Important Bird Areas; and 3) effects on important overwintering areas.

23 The Forest Plan identifies management indicator species (MIS) and sensitive species. MIS are  
24 representative species of the different successional stages of each major vegetation type and thereby serve  
25 as an indicator for detecting major habitat changes in that vegetation type. Sensitive species, as defined in  
26 Forest Service Manual 2670.5 (Forest Service 2005b), are those plant and animal species identified by a  
27 Regional Forester for which population viability is a concern, as evidenced by a significant current or  
28 predicted downward trends in population numbers or density and significant current or predicted  
29 downward trends in habitat capability that would reduce a species' existing distribution.

30 The resultant Migratory Bird Treaty Act, MIS, and TNF sensitive species analysis can be found in the  
31 Biological Evaluation, Management Indicator Species Report, and Migratory Bird Report (SWCA 2011)  
32 (Appendix E).

33 The analysis for this EA considered all 18 species; however, only three were considered in detail.  
34 The other 15 species were eliminated from further consideration because the project area is either clearly  
35 beyond the known geographic or elevational range of these species and/or it does not contain vegetation  
36 or landscape features known to support these species. In addition, designated critical habitat for the MSO  
37 is located within and directly west of the northern portions of the project area (along FR 32). Table 3.9  
38 presents the two species analyzed in detail for this EA.  
39

1 **Table 3.9.** Endangered Species Act Considerations in this EA

Common Name	Scientific Name	Current Status*
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	Threatened
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened
Mexican spotted owl designated critical habitat	N/A	Designated Critical Habitat
Headwater Chub	<i>Gila nigra</i>	USFWS Candidate

2 \* Status Definitions

3 Threatened. Threatened species are those in imminent jeopardy of becoming Endangered.

4 USFWS Candidate. Candidate species are those for which USFWS has sufficient information on biological vulnerability and threats to support  
5 proposals to list as Endangered or Threatened under the ESA. However, proposed rules have not yet been issued because such actions are  
6 precluded at present by other listing activity.7 The following three sections provide information on the species evaluated in detail for this analysis and  
8 provide a description of the species, their range and distribution, their habitat features, and known threats  
9 to the species.10 ***Chiricahua Leopard Frog***

11 The Chiricahua leopard frog (CLF) (*Rana chiricahuensis*) is a medium-sized amphibian species that  
12 currently is restricted to springs, livestock tanks, and streams in the upper portions of watersheds in  
13 Arizona and New Mexico at elevations between 3,500 and 8,400 feet amsl. Their disjunct range includes  
14 central, east-central, and southeast portions of Arizona. Currently, there are approximately 50 populations  
15 in Arizona. Major threats to the CLF include non-native predators, e.g., fish, bullfrogs (*Rana*  
16 *catesbeiana*), and crayfish (Family Cambaridae), and also a fungal skin disease called chytridomycosis  
17 (HDMS 2010). During the preliminary planning stages for this project, four sites within the project area  
18 were identified, and protocol surveys for the CLF were conducted along the Verde River and Chase Creek  
19 by permitted and trained SWCA biologists in July 2009. In addition, the Forest Service conducted  
20 protocol surveys for the CLF in May 2011. All survey results were negative.

21 ***Mexican Spotted Owl***

22 Mexican spotted owl (MSO) (*Strix occidentalis lucida*) is found in mature montane forests and  
23 woodlands; steep, shady, wooded canyons; and mixed-conifer and pine-oak vegetation types, generally  
24 nesting in live trees on natural platforms (e.g., dwarf mistletoe brooms), snags, and canyon walls within  
25 older forests of mixed conifers or ponderosa pine–Gambel oak at elevations between 4,000 and 9,500 feet  
26 amsl. This species is patchily distributed in forested mountains across Arizona and steep canyons on the  
27 Colorado Plateau (including the Grand Canyon); however, their range also includes portions of Colorado,  
28 Utah, New Mexico, Texas, and Mexico. The major threat to this species is loss and modification of  
29 nesting habitat (HDMS 2010).

30 The northern portion of the project area, specifically along Washington Park Road, is located adjacent  
31 to and within the southern boundary of Upper Gila Mountains 10 Critical Habitat Unit for MSO (Figure  
32 3.1). However, since this portion of the project area only includes the road ROW, it is not considered  
33 critical habitat because the area does not contain the habitat elements (i.e., defined by USFWS as the  
34 Primary Constituent Elements) needed to classify it as critical habitat. No designated Protected Activity  
35 Centers (PACs), i.e., documented breeding areas, are known within the project area. However,  
36 approximately eight PACs are known to exist within 5 miles of the project area, just below the  
37 Mogollon Rim.

## 1 **Headwater Chub**

2 Headwater chubs (*Gila nigra*), are typically found in large pools that contain cover such as root wads,  
 3 boulders, undercut banks, submerged organic debris, undercut banks, or deep water created by trees or  
 4 rocks in mid to upper reaches of medium-sized streams of the Gila River basin at elevations between  
 5 3,035 and 6,651 feet amsl. Adult microhabitat typically contains deep pools near the shore adjacent to  
 6 swift water riffles and runs (AGFD 2010). Portions of the East Verde River contain deep pools, boulders,  
 7 and undercut banks, which are elements of the required habitat characteristics for this species. Additional  
 8 information from AGFD's HDMS (HDMS 2011) indicates five occurrence records for this fish within 3  
 9 miles of the project area; one is within the project area and the other four are west of the southern half of  
 10 the project area. On the TNF in 2000, this species was known to inhabit Tonto Creek and its tributaries,  
 11 East Verde River, Fossil Creek, and other tributaries to the Verde River (TNF 2000).

12 The species evaluated in detail for this analysis have the potential to occur within the project area  
 13 (Table 3.10).

14 **Table 3.10.** ESA Protected Species and Presence of Suitable Habitat in Project  
 15 Area

Common Name	Habitat Present in Project Area
Chiricahua leopard frog	Yes
Mexican spotted owl	Yes
Headwater chub	Yes

## 16 **Environmental Consequences**

### 17 **No-Action Alternative**

18 Under the No-Action Alternative, no construction activities would occur and therefore no additional  
 19 ground disturbance would occur. Maintenance of the road in its current condition would continue to  
 20 intermittently result in minor, short-term disturbances to wildlife in the area. The No-Action Alternative  
 21 would therefore have minor, site-specific, direct and indirect impacts to wildlife individuals resulting  
 22 from ongoing maintenance activities along the road. However, there would be no direct or indirect  
 23 impacts to wildlife habitat.

### 24 **Pipeline Alternatives**

#### 25 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

26 The construction phase of Alternative 1 would include ground-disturbing activities for the trenching and  
 27 placement of the raw-water pipeline as described in Chapter 2. Potential impacts to general wildlife  
 28 (analyzed in detail in the Biological Evaluation and MIS reports) are described in Table 3.11 below.  
 29

1 **Table 3.11. Potential Construction Impacts on General Wildlife**

Wildlife Impact	Potential Effect and Likely Wildlife Affected	Effect Intensity and Duration
Direct injury or mortality	Destruction and injury of wildlife with limited mobility; amphibians, reptiles, birds, and mammals.	Minor short-term impacts to species within and adjacent to construction areas.
Habitat disturbance	Reduction or alternative on site-specific habitat; all wildlife.	Minor long-term impacts in areas in areas of permanent disturbance. Minor short-term impacts in areas of temporary disturbance.
Interference with behavioral activities (noise)	Disturbance of migratory movements; avoidance of construction areas by migrating birds and mammals. Disturbance of foraging and reproductive behaviors; birds and mammals.	Minor short-term impacts would occur for some species, while minor long-term impacts would occur for other species, which may completely abandon the disturbed habitats and adjacent areas.
Introduction or spread of invasive vegetation	Reduced habitat quality; all wildlife.	Minor long-term if established in areas where turbines, support facilities, and access roads are situated.
Increased fugitive dust	Respiratory impairment; all wildlife.	Minor short-term impacts.
Increased noise	Disturbance of foraging and reproductive behaviors; habitat avoidance; birds and mammals.	Minor short-term impacts.

2 Source: Adapted from BLM (2005).

3 **Chiricahua Leopard Frog**

4 Pipeline Alternative 1 does contain wetland or riparian areas similar to those in which CLF is known to  
5 occur. These potential habitat areas are located along the East Verde River and Chase Creek portions  
6 within the Pipeline Alternative 1 footprint. The CLF surveys conducted in these areas revealed no  
7 individuals present and also confirmed the presence of CLF predator species. According to USFWS  
8 guidance regarding habitat for the CLF, these areas would be considered unsuitable for the CLF because  
9 of the presence of multiple native and non-native predator species, including cold water fishes, mammals,  
10 crayfish, and insects (beetles, boatmen, and backswimmers). CLF can potentially disperse 1 mile  
11 overland, 3 miles over intermittent streams, and 5 miles over perennially streams. Dispersing CLF could  
12 be crushed by construction vehicles or buried in trenches in about 28 acres of private and Forest Service  
13 land located at the northern terminus of Alternative 1. But because 1) construction work would occur  
14 outside the monsoon season (July 1 to September 30), the most likely period when CLF will disperse, and  
15 2) such a small overlap occurs between the work area and CLF dispersal habitat, the effects would be  
16 negligible. Therefore, no direct, indirect, or cumulative impacts to the CLF or its habitat are expected to  
17 result from the construction and operation of Pipeline Alternative 1.

18 **Mexican Spotted Owl**

19 An approximately 2,107-foot-long section in the northern portion of Pipeline Alternative 1 (see Figure  
20 3.1) is located within the polygon of designated critical habitat for the MSO; however for reasons  
21 previously discussed, the portion of this project area is not considered critical habitat. As described in  
22 Chapter 2, Proposed Action, the 200-foot ROW corridor is narrowed where the project overlaps with  
23 MSO designated critical habitat to include only the existing roadway and shoulders in areas. The project  
24 area does not contain breeding habitat for the MSO but does contain marginal dispersal and foraging  
25 habitat. Construction of Pipeline Alternative 1 could result in impacts to any MSOs present in the area  
26 during construction as a result of disturbance from noise. Owls have very sensitive hearing to locate prey,  
27 and consequently owls are far more sensitive to noise than humans. Noise impacts to MSO may vary  
28 depending on whether they are breeding, raising young, or not breeding. Noise may cause MSO to  
29 abandon nest, lose hearing sensitivity (and consequently its ability to locate prey and calling young),  
30 waste energy from flushing, physiological stress, and expend energy for increased vigilance. Construction

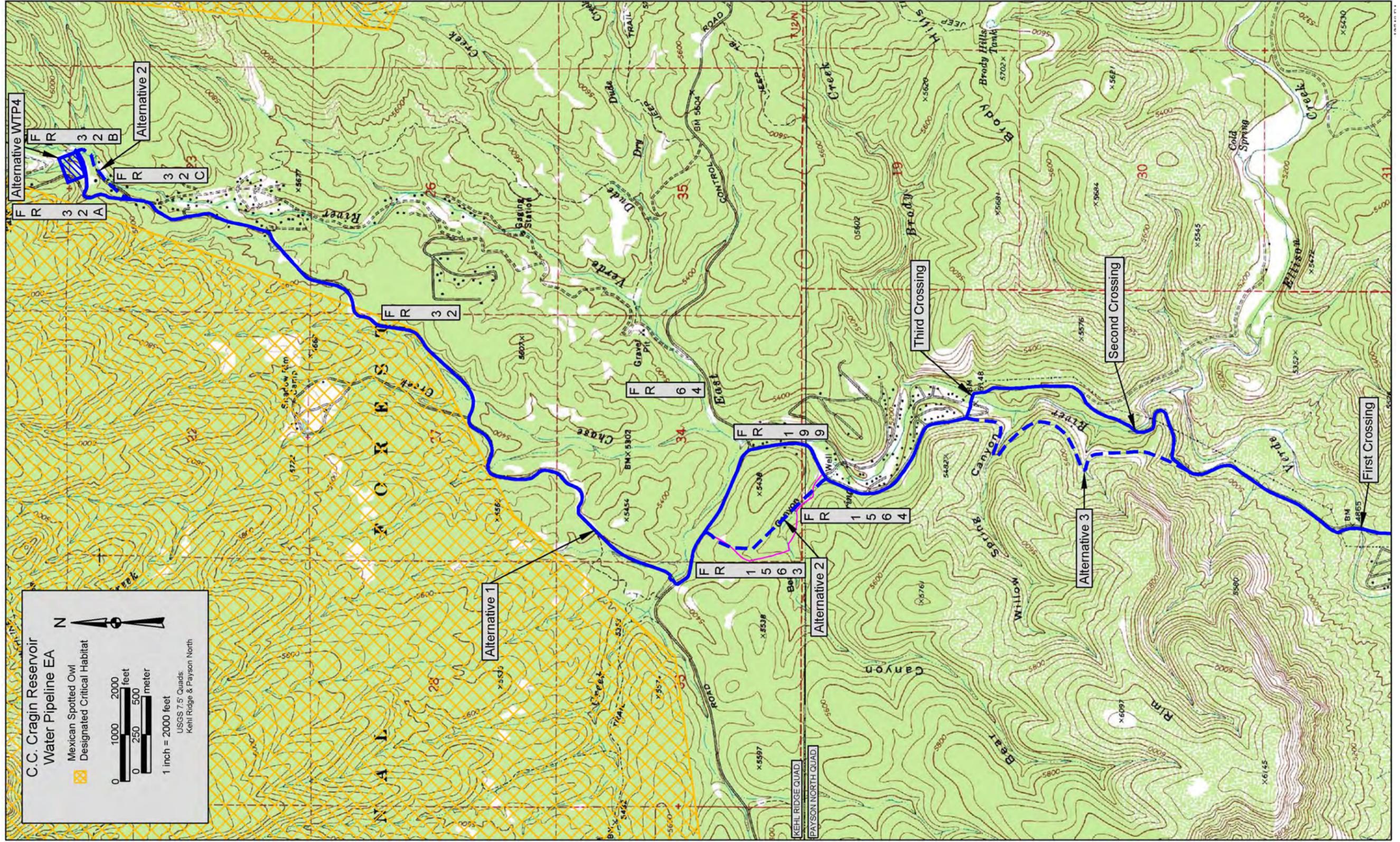


Figure 3.1 Project area showing designated critical habitat for the MSO.

1 *This page intentionally left blank*

1 activity would not occur during the breeding season (March 1 to August 31) while within MSO habitat,  
2 and consequently the effects of construction noise will be discountable to breeding MSO. The core of the  
3 MSO designated critical habitat, which are expected roosting sites, are located approximately 1.25 miles  
4 away from the Alternative 1 alignment and area to be disturbed for construction. Based on assumptions  
5 and sound attenuation calculations (discussed in detail in the Biological Assessment [SWCA 2011]), the  
6 level of noise that would cause an MSO to flush would not reach the core of the MSO designated critical  
7 habitat where MSO roost. Any noise that could reach MSO that could cause other behavioral effects other  
8 than flushing (for example, increased vigilance, loss of hearing sensitivity) would be dissipated among the  
9 trees, canyons, and topography of area, and therefore construction noise would have negligible impacts to  
10 roosting MSO. MSO may use habitat as foraging habitat along the northern reaches of Alternative 1.  
11 However, because the project would be generating 90% of the noise during daytime, the effects of general  
12 construction noise will be negligible. On the unusual occasion that a foraging owl may be affected by  
13 evening work between the First and Second crossing, the foraging owl would likely be accustomed to  
14 general, steady traffic noise along FR 32. Therefore, although no impacts to breeding habitat or PACs are  
15 anticipated, construction and operation of the pipeline could result in direct, adverse, local, minor, short-  
16 term impacts to individuals. Impacts to the designated critical habitat (which lacks the primary constituent  
17 elements) would not occur since the project area is lacking the primary constituent elements.

18 In terms of cumulative impacts, disturbances to potential dispersing and foraging MSOs already exists  
19 along Pipeline Alternative 1 because of the unrestricted travel access along the existing roadways;  
20 therefore, cumulative impacts would be adverse, local, minor, and long term.

## 21 **Headwater Chub**

22 Headwater chub occurring within the project area may be impacted by construction activities. Although  
23 mitigation measures are in place to prevent impacts, it cannot be ruled out that individuals may be  
24 impacted. Water quality in the downstream action area is not likely to impact headwater chub for the  
25 following reason. Ground disturbance associated with the pipeline project, in particular the First, Second,  
26 and Third crossings, could result in the release of sediment or other contaminants into the East Verde  
27 River. However, the project would be required to include the use of best management practices and  
28 structural sediment control measures to nearly eliminate the risk of sediment movement into surface  
29 waters. Quantity of water in the downstream action area may impact headwater chub for the following  
30 reasons. Current flows, i.e., the baseline environment, in the East Verde River include augmented flows  
31 and although a reduction of these augmented flows by one-third would still fall within, or exceed, the  
32 historical range of flow, it cannot be ruled out that this could impact headwater chub. These impacts  
33 would likely include increased inter- and intraspecific competition due to a reduction in the overall  
34 aquatic habitat at certain times of the year. Thus, direct, indirect, and cumulative impacts to the  
35 Headwater chub are anticipated to be adverse, local, minor, and long term.

## 36 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

### 37 **Chiricahua Leopard Frog**

38 Impacts described under Pipeline Alternative 1 are essentially the same for Pipeline Alternative 2 in terms  
39 of general wildlife and CLF presence and habitat; however, Pipeline Alternative 2 has additional areas of  
40 wetland or riparian vegetation along the Whispering Pines and Rim Trail alignments. Nonetheless, these  
41 areas are likely inhabited by CLF predators and would also be deemed unsuitable for the CLF. Therefore,  
42 no direct, indirect, or cumulative impacts to the CLF or its habitat are expected to result from construction  
43 and operation of Pipeline Alternative 2.

## 1 **Mexican Spotted Owl**

2 Pipeline Alternative 2 is almost the same as Pipeline Alternative 1 in terms of general wildlife and MSO  
3 presence and habitat since the main area of concern for the MSO, i.e., the designated critical habitat areas,  
4 are exactly the same for both alternatives. However, the approximately 15-acre Whispering Pines  
5 alignment associated with Pipeline Alternative 2 would create new vegetation disturbances in an area that  
6 is currently undisturbed and that dispersing MSOs could use. Thus, in addition to impacts described under  
7 Pipeline Alternative 1, Alternative 2 presents an additional direct, adverse, local, minor, and long-term  
8 impact. All other MSO-related impacts would be the same as for Pipeline Alternative 1.

## 9 **Headwater Chub**

10 Impacts described under Pipeline Alternative 1 are the same for Pipeline Alternative 2 in terms of  
11 headwater chub presence and habitat. Therefore, direct, indirect, and cumulative impacts to the  
12 Headwater chub and its habitat are anticipated to be adverse, local, minor, and long term under Pipeline  
13 Alternative 2.

## 14 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

### 15 **Chiricahua Leopard Frog**

16 Pipeline Alternative 3 is similar to Pipeline Alternatives 1 and 2 in terms of general wildlife and CLF  
17 presence and habitat; however, the Pipeline Alternative 3 approximately 31-acre Second and Third  
18 crossing alignments would eliminate two of the East Verde crossings and would be located on the west  
19 side of the East Verde River. Nonetheless, these areas are likely inhabited by CLF predators and would  
20 also be deemed unsuitable for the CLF. Therefore, no direct, indirect, or cumulative impacts to the CLF  
21 or its habitat are expected to result from construction and operation of Pipeline Alternative 2.

### 22 **Mexican Spotted Owl**

23 Pipeline Alternative 3 is almost the same as Pipeline Alternatives 1 and 2 in terms of general wildlife and  
24 MSO presence and habitat since the main area of concern for the MSO, i.e., the designated critical habitat  
25 areas, are exactly the same for both alternatives. However, the approximately 31-acre Second and Third  
26 crossing alignments associated with Pipeline Alternative 3 would create new vegetation disturbances in  
27 an area that is currently undisturbed and that dispersing MSOs could use. Thus, Pipeline Alternative 3  
28 presents an additional direct, adverse, local, minor, long-term impact. All other MSO-related impacts  
29 would be the same as for Pipeline Alternatives 1 and 2.

### 30 **Headwater Chub**

31 Impacts described under Pipeline Alternative 1 would be similar but lessened for Pipeline Alternative 3 in  
32 terms of headwater chub presence and habitat because there would be two less crossing of the east Verde  
33 River. Therefore, direct, indirect, and cumulative impacts to the Headwater chub and its habitat are  
34 anticipated to be adverse, local, minor, and long term under Pipeline Alternative 2. Water Treatment Plant  
35 Alternatives

## 36 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

37 The potential impacts of WTP1 to general wildlife would be the same as described for Alternative 1-  
38 Original Proposed Pipeline alternative. Habitat for the CLF, MSO, and headwater chub is not present  
39 within, or directly adjacent to, the footprint of Alternative WTP1; therefore, no direct, indirect, or

1 cumulative impacts are expected to the CLF, MSO, headwater chub, or their habitat as a result of the  
2 construction and operation of Alternative WTP1.

### 3 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

4 The construction of WTP2 would have a major, short-term, adverse impact to the existing Shoofly Tank  
5 to the wildlife (such as elk and deer) that use the Tank as a water source. The impact to wildlife that may  
6 use Shoofly Tank would cease during operation of WTP2 since the Tank would be outside the footprint of  
7 WTP2 and the animals are habituated to human presence at Shoofly Tank due to its proximity to the  
8 existing Mesa del Caballo subdivision and traffic along Houston Mesa Road.

9 Habitat for the CLF, MSO, and headwater chub is not present within, or directly adjacent to, the footprint  
10 of Alternative WTP2; therefore, no direct, indirect, or cumulative impacts are expected to the CLF, MSO,  
11 headwater chub, or their habitat as a result of the construction and operation of Alternative WTP2.

### 12 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

13 The potential impacts of WTP3 to general wildlife would be the same as described for Alternative 1-  
14 Original Proposed Pipeline alternative. Habitat for the CLF, MSO, and headwater chub is not present  
15 within, or directly adjacent to, the footprint of Alternative WTP3; therefore, no direct, indirect, or  
16 cumulative impacts are expected to the CLF, MSO, headwater chub, or their habitat as a result of the  
17 construction and operation of Alternative WTP3.

### 18 **ALTERNATIVE WTP4 – TAILRACE SITE**

19 The potential impacts of WTP4 to general wildlife would be the same as described for Alternative 1-  
20 Original Proposed Pipeline alternative.

#### 21 **Chiricahua Leopard Frog**

22 Wetland or riparian areas similar to those in which the CLF is known to occur are not present within, but  
23 are present directly adjacent to (along the East Verde River channel), the footprint of Alternative WTP4;  
24 nonetheless, these areas are likely inhabited by CLF predators and would also be deemed unsuitable for  
25 the CLF. Therefore, no direct, indirect, or cumulative impacts to the CLF or its habitat are expected to  
26 result from construction and operation of Alternative WTP4.

#### 27 **Mexican Spotted Owl**

28 Although MSO breeding habitat (including PACs) and designated critical habitat are not present within  
29 the footprint of Alternative WTP4, marginal dispersal and foraging habitat is present within, and directly  
30 adjacent to, the site. Furthermore, the boundary of the designated critical habitat is less than 0.25 mile  
31 west and north of Alternative WTP4. Therefore, although no impacts to breeding habitat or PACs are  
32 anticipated, construction and operation of Alternative WTP4 could result in direct, adverse, local, minor,  
33 short-term impacts to individuals. In terms of cumulative impacts, disturbances to potential dispersing and  
34 foraging MSOs already exist in the area as a result of the unrestricted travel access along the existing  
35 roadways. Therefore, cumulative impacts would be adverse, local, minor, and long term.

#### 36 **Headwater Chub**

37 Aquatic habitats similar to those in which the headwater chub is known to occur are not present within the  
38 footprint of Alternative WTP4; therefore, no direct, indirect, or cumulative impacts to the headwater chub  
39 or its habitat are expected to result from construction and operation of Alternative WTP4.

## 1 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

2 The potential impacts of WTP5 to general wildlife would be the same as described for Alternative 1-  
3 Original Proposed Pipeline alternative. Habitat for the CLF, MSO, and headwater chub is not present  
4 within, or directly adjacent to, the footprint of Alternative WTP5; therefore, no direct, indirect, or  
5 cumulative impacts are expected to the CLF, MSO, headwater chub, or their habitat as a result of the  
6 construction and operation of Alternative WTP5.

## 7 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

8 The potential impacts of WTP6 to general wildlife would be the same as described for Alternative 1-  
9 Original Proposed Pipeline alternative.

10 Habitat for the CLF, MSO, and headwater chub is not present within, or directly adjacent to, the footprint  
11 of Alternative WTP6; therefore, no direct, indirect, or cumulative impacts are expected to the CLF, MSO,  
12 headwater chub, or their habitat as a result of the construction and operation of Alternative WTP6.

## 13 **ALTERNATIVE WTP7 – PROPOSED ACTION**

14 The potential impacts of WTP7 to general wildlife would be the same as described for Alternative 1-  
15 Original Proposed Pipeline alternative.

16 Habitat for the CLF, MSO, and headwater chub is not present within, or directly adjacent to, the footprint  
17 of Alternative WTP7; therefore, no direct, indirect, or cumulative impacts are expected to the CLF, MSO,  
18 headwater chub, or their habitat as a result of the construction and operation of Alternative WTP7.

## 19 ***Infrastructure Tie-Ins***

20 No wildlife would be impacted from construction of the infrastructure tie-ins required to connect the  
21 WTP to the existing sewer and water distribution systems. Tie-ins to the existing infrastructure would not  
22 result in new ground disturbance or vegetation removal. It is anticipated that installation of these tie-ins  
23 would be wholly contained within existing roadways and would not require new land surface disturbance  
24 that would change current wildlife habitat conditions. Tie-ins to for electrical power would require  
25 localized, short-term ground disturbances in order to construct the power line towers.

## 26 ***Mitigation***

- 27 • Mexican Spotted Owl (MSO): Construction activities would be conducted outside the MSO  
28 breeding season (March 1 through August 31) in MSO habitat, north of Wonder Valley.  
29
- 30 • Chiricahua leopard frog (CLF): Construction activities would be conducted outside CLF  
31 monsoon dispersal period (July 1 through September 30) in CLF dispersal habitat from Pieper  
32 Springs, north of 3rd crossing campground.  
33
- 34 • During construction of the East Verde River Crossings, the protection of fish species will be  
35 accomplished by:
  - 36 1. Maintaining flow through or around the river crossing during construction.
  - 37 2. Performing the construction during a period of low flows.
  - 38 3. The method of construction proposed and materials proposed have low sedimentation  
39 potential.
  - 40 4. The use of BMP's to reduce the sedimentation in the river due to construction activities.

- 1       • The following mitigation measures will be utilized to minimize effects to the East Verde River  
2 during construction:
- 3       1. Contractor shall follow BMPs to reduce sedimentation and prevent spills (oil, gas, etc.) from  
4 entering the flow of the East Verde River during construction activities.
- 5       2. The method being proposed maintains flow within the river.
- 6       3. Sandbags are being used to create the diversion and will not cause excessive sedimentation  
7 when placed or removed.
- 8       4. The construction will take place during low flow conditions reducing the sediment transport  
9 capabilities of the river.
- 10
- 11       • Noxious weed spread prevention: Prior to entering or leaving the project area, all earth-moving  
12 and hauling equipment will be cleaned of all plant parts and soil to help prevent the spread of  
13 noxious weeds.
- 14
- 15       • Seeding: All disturbed soils will be seeded with native species. Seed lots to be used in  
16 revegetation will be tested at a state laboratory for the presence of TNF noxious weed species'  
17 seed before the lots are mixed. Seeding shall be implemented on all finished slopes as they are  
18 completed.
- 19
- 20       • Water use: Water would be used throughout the construction period 1 from one of three sources,  
21 or a combination of the three sources, as necessary, to reduce fugitive dust and particulate matter.  
22 Daily water needs would depend on ambient conditions and activities that require abatement.  
23 The three potential sources are the allocated 3,000 af of C.C. Cragin Reservoir water, reclaimed  
24 water from the NGCSD, and/or private wells located in the residential areas along the project  
25 alignment.
- 26
- 27       • Erosion control: Temporary and permanent erosion control measures will be incorporated.  
28 Erosion, including runoff, of excavated material would be managed under a SWPPP and an  
29 AZPDES permit. Coverage under AZPDES may be obtained either through issuance of an  
30 Individual Permit, or under one of the five General Permits issued by ADEQ. As a part of the  
31 AZPDES permit, a SWPPP is required to be developed that identifies areas of stormwater  
32 discharge and the BMPs that will be used to prevent pollutants from entering the stormwater.  
33 General requirements of the AZPDES permit include additional details and are located in  
34 Appendix A of the BA.
- 35
- 36       • Clearing limits: Limits of clearing shall be made irregular by varying the width of the area to be  
37 cleared or by leaving selected clumps of vegetation near the edge of the clearing limit.
- 38
- 39       • Slope rounding: Slope rounding shall occur at the intersection of cuts and natural grades to blend  
40 two surface edges for a natural-appearing transition.
- 41
- 42       • Slope roughening: All cut and fill slopes will be roughened by tilling or ripping 12 inches deep  
43 parallel to the contour.
- 44
- 45       • Vegetation: Vegetation outside the specified clearing limits will be preserved and protected.  
46 Vegetation inside the specified clearing limits, if of merchantable value, will be purchased from  
47 the Forest Service.
- 48
- 49       • Reclamation: After use, staging areas will be obliterated and put back into as near natural  
50 conditions as possible. Obliteration will include roughening, recontouring, and seeding.

# 1 VEGETATION

## 2 Affected Environment

3 The project area is located within four biotic communities: Interior Chaparral, Great Basin Conifer  
4 (Pinyon/Juniper) Woodland, Petran Montane Conifer Forest, and High-Elevation Riparian (Brown  
5 1994; USGS 2004). The lower-elevational areas are located in an ecotonal zone where several biotic  
6 communities intermingle. Interior Chaparral components are mainly found in the southern, lower-  
7 elevation portions of the project area; the Great Basin Conifer Woodland components are represented in  
8 the middle, moderate-range elevational portions; and the Petran Montane Conifer Forest components are  
9 represented in the upper, higher-elevational range portions. High-Elevation Riparian components are  
10 located along the East Verde River crossings. In addition, numerous other drainages cross through the  
11 project area, including Chase Creek and the drainages associated with Bear and Shoofly canyons.  
12 Elevations range from 4,846 to 5,840 feet amsl and increase from south to north. Topography is  
13 dominated by rolling to steep hills and drainages, cuts, and canyons interlacing the area, providing flow  
14 from north to south as a result of runoff from the Mogollon Rim, which is just north of the northernmost  
15 portion of the project area.

16 Typical plant species throughout all alternatives include the following: ponderosa pine (*Pinus ponderosa*),  
17 two-needle pinyon (*P. edulis*), Emory oak (*Quercus emoryi*), Arizona white oak (*Q. arizonica*), shrub-live  
18 oak (*Q. turbinella*), alligator-bark juniper (*Juniperus deppeana*), point-leaf manzanita (*Arctostaphylos*  
19 *pungens*), catclaw mimosa or wait-a-minute bush (*Mimosa aculeaticarpa* var. *biuncifera*), Wright  
20 silktassel (*Garrya wrightii*), sotol or desert spoon (*Dasyilirion wheeleri*), soaptree yucca (*Yucca elata*),  
21 beargrass (*Nolina microcarpa*), skunkbrush sumac (*Rhus trilobata*), black grama (*Bouteloua eriopoda*),  
22 sideoats grama (*B. curtipendula*), big galleta (*Pleuraphis rigida*), sacred datura (*Datura wrightii*),  
23 silverleaf nightshade (*Solanum elaeagnifolium*), snakeweed (*Gutierrezia sarothrae*), bastardsage  
24 (*Eriogonum wrightii*), beardtongue (*Penstemon* sp.), annual goldeneye (*Viguiera* sp.), Indian paintbrush  
25 (*Castilleja* sp.), prickly pear (*Opuntia* sp.), mullein (*Verbascum* sp.), Arizona thistle (*Cirsium*  
26 *arizonicum*), whorled milkweed (*Asclepias verticillata*), white clover (*Trifolium repens*), and Arizona  
27 thistle (*Cirsium arizonicum*).

28 All pipeline alternatives are located within the four biotic communities described above and also contain  
29 ecotonal areas. Staging areas 1–4 are located in the ecotonal zone between Interior Chaparral and Great  
30 Basin Conifer Woodland, and staging areas 5–7 are all within the Petran Montane Conifer Forest biotic  
31 community.

32 In terms of WTP alternatives, WTP1–WTP3 and WTP5 – WTP7 are all located in the ecotonal zone  
33 between Interior Chaparral and Great Basin Conifer Woodland; WTP4 is located within the Petran  
34 Montane Conifer Forest and is also directly adjacent to the East Verde River, which contains High-  
35 Elevation Riparian vegetation.

36 Although the proposed pipeline alignment is located within a national forest, numerous disturbances exist  
37 within, and adjacent to, the project area; these include, but are not limited to, paved roadways, dirt roads,  
38 residential developments, campgrounds, hydroelectric facilities, recently burned vegetation from wildfire,  
39 recreational amenities, thinned vegetation to prevent wildfire, grazing, parking lots, and other similar  
40 disturbances. Thus, this area is not considered pristine, untouched wilderness but instead is a relatively  
41 disturbed and frequently traveled area.

42 The USFWS list of protected species under the ESA for Gila County was considered for this analysis; two  
43 plant species are listed for Gila County. Arizona bugbane (*Cimicifuga arizonica*) is a conservation

1 agreement species, and Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) is an  
2 endangered species (see Appendix D). However, these two species are not carried forward for detailed  
3 analysis and are eliminated from further consideration because the project area is either clearly beyond  
4 the known geographic and elevational range of these species and/or it does not contain landscape features  
5 known to support these species.

## 6 **Environmental Consequences**

### 7 ***No-Action Alternative***

8 No ground disturbance would take place under the No-Action Alternative; thus, there would be no direct,  
9 indirect, or cumulative impacts to vegetation or ESA-protected plant species.

### 10 ***Pipeline Alternatives***

#### 11 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

12 Although the current condition includes approximately 43 acres of disturbed areas, a maximum of  
13 approximately 357 acres of ground disturbance would occur as a result of the construction of Pipeline  
14 Alternative 1, including staging areas. These impacts would include 54 acres to the Great Basin Conifer  
15 Woodland biotic community, 40 acres to the Interior Chaparral biotic community, and 210 acres to the  
16 Petran Montane Conifer Forest biotic community. No impacts to ESA-protected plant species or to the  
17 9 acres of the High-Elevation Riparian biotic community are anticipated.

18 However, impacts of Pipeline Alternative 1 construction to vegetation in general would be direct and  
19 adverse as a result of ground disturbance. Since the impacts of vegetation removal and trimming are site  
20 specific, overall, the impact to vegetation would be minor and short term, since re-seeding and natural  
21 revegetation are expected to occur after construction. However, due to the arid nature of the region, when  
22 combined with the slow-growth of trees, replanting and reseeded may take many years to grow back to  
23 the existing condition. Thus, direct and indirect impacts to vegetation under Pipeline Alternative 1 would  
24 be both short- and long-term, site-specific, minor, and adverse.

25 In terms of cumulative impacts, ground-disturbing activities related to Pipeline Alternative 1, along with  
26 the past, present, and future actions that resulted in ground disturbance for this area, could create local,  
27 minor, long-term, adverse impacts to vegetation.

#### 28 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

29 Although the current condition includes approximately 34 acres of disturbed areas, a maximum of  
30 approximately 352 acres of ground disturbance would occur as a result of the construction of Pipeline  
31 Alternative 2, including staging areas. These impacts would include 57 acres to the Great Basin Conifer  
32 Woodland biotic community, 43 acres to the Interior Chaparral biotic community, and 209 acres to the  
33 Petran Montane Conifer Forest biotic community. No impacts to ESA-protected plant species or to the  
34 8 acres of the High-Elevation Riparian biotic community are anticipated. However, impacts of Pipeline  
35 Alternative 2 construction to vegetation in general would be direct and adverse as a result of ground  
36 disturbance. Since the impacts of vegetation removal and trimming are site specific, overall, the impact  
37 to vegetation would be adverse, minor, and short term, since re-seeding and natural revegetation are  
38 expected to occur after construction.

39 In addition, the Tailrace alignment portion of Pipeline Alternative 2 would occur in an area that is only  
40 partially undisturbed (approximately 3,000 feet is undisturbed); thus, Alternative 2 impacts would include

1 up to approximately 17 acres of new ground disturbance. Similarly, the Whispering Pines alignment  
2 portion of Pipeline Alternative 2 would occur in an area that is currently undisturbed; thus, Pipeline  
3 Alternative 2 impacts would include approximately 15 acres of new ground disturbance that are not  
4 included as part of Pipeline Alternative 1.

5 Cumulative impacts of Pipeline Alternative 2 would be the same as for Pipeline Alternative 1.

## 6 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

7 Although the current condition includes approximately 34 acres of disturbed areas, a maximum of  
8 approximately 357 acres of ground disturbance would occur as a result of the construction of Pipeline  
9 Alternative 3, including staging areas. These impacts would include 57 acres to the Great Basin Conifer  
10 Woodland biotic community, 43 acres to the Interior Chaparral biotic community, and 213 acres to the  
11 Petran Montane Conifer Forest biotic community. No impacts to ESA-protected plant species or to the  
12 10 acres of the High-Elevation Riparian biotic community are anticipated. However, impacts of Pipeline  
13 Alternative 3 construction to vegetation in general would be direct and adverse as a result of ground  
14 disturbance. Since the impacts of vegetation removal and trimming are site specific, overall, the impact to  
15 vegetation would be adverse, minor, and short term, since re-seeding and natural revegetation are  
16 expected to occur after construction.

17 In addition, the Second and Third crossing alignments portion of Pipeline Alternative 3 would occur in an  
18 area that is currently undisturbed; thus, Pipeline Alternative 3 impacts would include approximately  
19 31 acres of new ground disturbance that are not included in Pipeline Alternatives 1 or 2.

20 Cumulative impacts of Pipeline Alternative 3 would be the same as for Pipeline Alternative 1.

## 21 ***Water Treatment Plant Alternatives***

### 22 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

23 Alternative WTP1 site totals 5 acres. Thus, the construction and operation of Alternative WTP1 would  
24 impact a maximum of 5 acres of the Great Basin Conifer Woodland biotic community. This impact is  
25 direct and adverse and would have a minor, long-term impact to the Great Basin Conifer Woodland biotic  
26 community since the WTP1 would be permanent.

27 Cumulative impacts of WTP1 would be the same as described under Pipeline Alternatives.

### 28 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

29 Alternative WTP2 site totals 10 acres. Thus, the construction and operation of Alternative WTP1 would  
30 impact a maximum of 10 acres of Great Basin Conifer Woodland. This impact is direct and adverse and  
31 would have a minor, long-term impact to the Great Basin Conifer Woodland biotic community since the  
32 WTP2 would be permanent.

33 Cumulative impacts of WTP2 would be the same as described under Pipeline Alternatives.

### 34 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

35 Alternative WTP3 would have the same direct, indirect, and cumulative effects on vegetation as  
36 Alternative WTP2.

## 1 **ALTERNATIVE WTP4 – TAILRACE SITE**

2 Alternative WTP4 would have the same direct, indirect, and cumulative effects on vegetation as  
3 Alternative WTP2.

## 4 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

5 Alternative WTP5 would have the same direct, indirect, and cumulative effects on vegetation as  
6 Alternative WTP1.

## 7 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

8 Alternative WTP6 would have the same direct, indirect, and cumulative effects on vegetation as  
9 Alternative WTP1.

## 10 **ALTERNATIVE WTP7 – PROPOSED ACTION**

11 Alternative WTP4 would have the same direct, indirect, and cumulative effects on vegetation as  
12 Alternative WTP2.

## 13 ***Infrastructure Tie-Ins***

14 It is anticipated that installation of the infrastructure tie-ins to existing water and sewer lines would occur  
15 within previously disturbed existing roadways. Tie-ins to for electrical power would require localized,  
16 short-term ground disturbances in order to construct the power line towers.

## 17 ***Mitigation***

- 18 • Seeding: all disturbed soils would be seeded with native species. Seed lots to be used in  
19 revegetation would be tested at a state laboratory for the presence of TNF noxious weed species'  
20 seed before the lots are mixed. Seeding shall be implemented on all finished slopes as they are  
21 completed.
- 22 • Clearing limits: limits of clearing shall be irregular by varying the width of the area to be cleared  
23 or by leaving selected clumps of vegetation near the edge of the clearing limit.
- 24 • Vegetation: vegetation outside the specified clearing limits would be preserved and protected.  
25 Vegetation inside the specified clearing limits, if of merchandisable value, would be purchased  
26 from the Forest Service.
- 27 • After use, staging areas would be obliterated and put back into as near as natural conditions as  
28 possible. Obliteration would include roughening, re-contouring, and seeding.

## 29 **NOXIOUS WEEDS**

### 30 **Affected Environment**

31 Noxious weeds are defined as plant species that have one or more of the following characteristics:  
32 “aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or  
33 disease, and being native or new to or not common to the United States or parts thereof” (Forest Service  
34 1995). Noxious weeds typically establish and grow rapidly on a variety of sites, often becoming dominant

1 and persisting in an area, and may present a threat to the environment or agriculture. The Arizona  
2 Department of Agriculture (ADA) maintains a list of noxious weed species (ADA 2010), as does the  
3 TNF (TNF 2010).

4 The majority of exotic plants and noxious weeds occur in areas that have been previously disturbed, such  
5 as road sides. Four non-native species were observed in the project area: field bindweed (*Convolvulus*  
6 *arvensis*), yellow sweetclover (*Melilotus officinalis*), saltcedar (*Tamarix* sp.), and common mullein  
7 (*Verbascum thapsus*). Field bindweed is listed by the ADA as a “Prohibited and Regulated” noxious weed  
8 and by the TNF as a Category C noxious weed. Yellow sweetclover and saltcedar are not listed by the  
9 ADA, but they are listed as Category C noxious weeds by the TNF. However, common mullein is not on  
10 either list.

11 The ADA category definitions are as follows: prohibited species are those that are prohibited from entry  
12 into Arizona, and regulated species are controlled or quarantined to prevent further infestation or  
13 contamination if found within Arizona. Category C designation by the TNF includes species that have  
14 spread beyond the capability of eradication; therefore, the management goal is to contain spread of  
15 present size, then decrease the population, if possible.

16 The four non-native species were observed in the project area during windshield and pedestrian surveys  
17 of the project area; however, no in-depth inventory (survey) for noxious weeds has been conducted.

## 18 **Environmental Consequences**

### 19 ***No-Action Alternative***

20 No new ground disturbance would take place under the No-Action Alternative, and there would be no  
21 direct, indirect, or cumulative impacts to noxious weeds.

### 22 ***Pipeline Alternatives***

#### 23 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

24 Although the current condition includes approximately 43 acres of disturbed areas, a maximum of  
25 approximately 357 acres of ground disturbance would occur as a result of the construction of Pipeline  
26 Alternative 1, including staging areas. Prevention and mitigation measures implemented with this  
27 alternative would reduce the risk of spread and introduction of non-native plant species; however, four  
28 non-native plant species are already known to exist along the route for Pipeline Alternative 1. Thus, direct  
29 impacts from the construction and operation of Pipeline Alternative 1 in site-specific areas would be  
30 adverse and long-term as a result of new ground disturbance, which would increase the risk of spread and  
31 introduction of noxious weed species.

32 Although no direct or indirect impacts from operation are expected, cumulative impacts could occur in  
33 terms of noxious weed spread and introduction risk as a result of the operational and additional travel  
34 access along the existing roadways in the region and the expected continued recreational use of the TNF.  
35 Therefore, the operation of Pipeline Alternative 1, along with the past, present, and future actions for this  
36 area, would create an adverse, long-term, cumulative impact.

#### 37 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

38 Although the current condition includes approximately 34 acres of disturbed areas, a maximum of  
39 approximately 352 acres of new ground disturbance would occur as a result of the construction of

1 Pipeline Alternative 2, including staging areas. Prevention and mitigation measures implemented with  
2 this alternative would reduce the risk of spread and introduction of non-native plant species; however,  
3 four non-native plant species are already known to exist along the route for Pipeline Alternative 2. Thus,  
4 direct impacts from the construction and operation of Pipeline Alternative 2 in site-specific areas would  
5 be adverse and long term as a result of new ground disturbance, which would increase the risk of spread  
6 and introduction of noxious weed species.

7 In addition, the Rim Trails and Whispering Pines alignment portions of Pipeline Alternative 2 would  
8 occur in areas that currently include undisturbed, undeveloped TNF land; thus, Pipeline Alternative 2  
9 impacts would include approximately 23 acres of new ground disturbance that are not included as part of  
10 Pipeline Alternative 1.

11 Cumulative impacts for Pipeline Alternative 2 are the same as for Pipeline Alternative 1.

## 12 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

13 Although the current condition includes approximately 34 acres of disturbed areas, a maximum of  
14 approximately 357 acres of new ground disturbance would occur as a result of the construction of  
15 Pipeline Alternative 3, including staging areas. Prevention and mitigation measures implemented with  
16 this alternative would reduce the risk of spread and introduction of non-native plant species; however,  
17 four non-native plant species are already known to exist along the route for Pipeline Alternative 3. Thus,  
18 direct impacts from the construction and operation of Pipeline Alternative 3 in site-specific areas would  
19 be adverse and long term as a result of new ground disturbance, which would increase the risk of spread  
20 and introduction of noxious weed species.

21 In addition, the Second and Third crossing alignment portion of Pipeline Alternative 3 would occur in an  
22 area that currently includes undisturbed, undeveloped TNF land; thus, Pipeline Alternative 3 impacts  
23 would include approximately 31 acres of new ground disturbance that are not included in Pipeline  
24 Alternatives 1 or 2.

25 Cumulative impacts for Pipeline Alternative 3 are the same as for Pipeline Alternative 1.

## 26 ***Water Treatment Plant Alternatives***

### 27 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

28 A maximum of 5 acres of ground disturbance would occur as a result of the construction of Alternative  
29 WTP1. Prevention and mitigation measures implemented during construction of this alternative would  
30 reduce the risk of spread and introduction by non-native plant species. In addition, the final structure for  
31 operation would contain a non-permeable surface that would eliminate the risk of noxious weed invasion;  
32 thus, construction impacts associated with Alternative WTP1 are expected to be negligible. On the other  
33 hand, cumulative impacts could occur in terms of noxious weed spread and introduction risk as a result of  
34 the operational and additional travel access along the existing roadways in the region; therefore, the  
35 operation of Alternative WTP1, along with the past, present, and future actions for this area, would create  
36 an adverse, local, moderate, long-term, cumulative impact.

### 37 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

38 A maximum of 10 acres of ground disturbance would occur as a result of the construction of Alternative  
39 WTP1. Alternative WTP2 would have direct, indirect, and cumulative effects on noxious weeds.

## 1 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

2 Alternative WTP3 would have the same direct, indirect, and cumulative effects on noxious weeds as  
3 Alternative WTP1.

## 4 **ALTERNATIVE WTP4 – TAILRACE SITE**

5 Alternative WTP4 would have the same direct, indirect, and cumulative effects on noxious weeds as  
6 Alternative WTP1.

## 7 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

8 Alternative WTP5 would have the same direct, indirect, and cumulative effects on noxious weeds as  
9 Alternative WTP1.

## 10 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

11 Alternative WTP6 would have the same direct, indirect, and cumulative effects on noxious weeds as  
12 Alternative WTP1.

## 13 **ALTERNATIVE WTP7 – PROPOSED ACTION**

14 Alternative WTP7 would have the same direct, indirect, and cumulative effects on noxious weeds as  
15 Alternative WTP1.

## 16 ***Infrastructure Tie-Ins***

17 Construction and presence of infrastructure tie-ins from the WTP to the existing sewer and water  
18 distribution systems would occur within existing roadways. Tie-ins to for electrical power would require  
19 localized, short-term ground disturbances in order to construct the power line towers. Additional ground  
20 disturbance is not anticipated. Prevention and mitigation measures implemented would reduce the risk of  
21 spread and introduction of non-native plant species.

## 22 ***Mitigation***

- 23 • Prior to entering or leaving the project area, all earth-moving and hauling equipment would be  
24 cleaned of all plant parts and soil to help prevent the spread of noxious weeds.
- 25 • Prior to construction, surveys for noxious weeds would be completed. The Forest Service would  
26 coordinate with the Town and the contractor regarding the best manner of treatment.

## 27 **SOCIOECONOMICS**

### 28 **Affected Environment**

29 Potentially affected parties (project stakeholders) include area residents, area recreationists, and business  
30 owners. The study area includes the TNF, the Town, and private communities along Houston Mesa Road.

31 The TNF and the Town are located in the central part of Arizona, within Gila County. Payson is the  
32 largest community in the study area; however, several small private subdivisions are located in the study  
33 area, along FR 32B, FR 32 (Washington Park Road), FR 64 (Control Road), FR 199 (Houston Mesa

1 Road) and West Houston Mesa Road. These communities include Mesa del Caballo, Freedom Acres,  
2 Beaver Valley Estates, Verde Glen, Wonder Valley, Rim Trails Estates, Washington Park, and  
3 Whispering Pines. These subdivisions are not located with the Town limits; they are located in  
4 unincorporated Gila County. Among other benefits associated with living in these area communities,  
5 proximity and access to open space (i.e., TNF lands) is highly valued. In fact, access to and views of open  
6 space and the TNF is often reflected in increased real property values and increased marketability of a  
7 property because of its proximity to such lands.

8 The Tonto-Apache Reservation is located approximately 3 miles from the south end of the study area.

9 The Town's economic activity is dominated by education, health, and social services (19%), tourism  
10 (15%), construction (15%), and retail trade (12%) (Sonoran Institute 2010). The Town and its environs  
11 are known for their natural beauty, recreational opportunities, and, more recently, a growing business  
12 environment. Manufacturing and service firms, including light industry and high-tech operations, are a  
13 growing emphasis for the Town (ADOC 2009).

14 The population in the town of Payson grew by 11%, from 13,620 in 1999 to 15,176 in 2009. This rate of  
15 growth was much greater than for all of Gila County (2%), but less than for the state as a whole (29%)  
16 over the same period (U.S. Census Bureau 2011a, 2011b). In 2010, the median age of the town's residents  
17 was 51.4, and 59% of the population was 45 years old or older (U.S. Census Bureau 2011b).

18 As the fifth-largest forest in the United States, the TNF occupies nearly 3 million acres of land. The TNF  
19 borders Phoenix to the south, the Mogollon Rim to the north, and the San Carlos and Fort Apache Indian  
20 Reservations to the east, providing recreational opportunities year-round. The TNF is a destination for  
21 residents of more urban areas, as well as for locals.

## 22 **Environmental Consequences**

### 23 ***No-Action Alternative***

24 No project activities would occur under the No-Action Alternative. The Town and SRP would continue  
25 to pursue a means for delivering the Town's C.C. Cragin water right. Alternately, the Town also could  
26 pursue developing additional groundwater supplies and implementing other programs to strengthen the  
27 reliability of its supplies.

28 The No-Action Alternative does not add to the cumulative effects when added to the past, present, and  
29 reasonably foreseeable future actions included in Appendix A.

### 30 ***Pipeline Alternatives***

#### 31 **ALTERNATIVE 1 – ORIGINAL PROPOSED WATER PIPELINE ALTERNATIVE**

32 During construction of the proposed pipeline, there would be a short-term increase in local employment.  
33 Construction of the pipeline would require an estimated 50 to 75 workers over the 18- to 24-month  
34 construction period. The project workforce would be expected to draw from the existing local  
35 construction workforce. Thus, construction of the proposed pipeline could result in short-term benefits  
36 to the local economy as a result of construction-related expenditures and employment.

37 As noted in Chapter 2, project construction would likely require some travel restrictions; therefore, access  
38 for area residents, recreationists, and businesses would be affected. At least one lane of travel would be  
39 maintained at all times, and during daylight hours and peak travel times, no complete road closures or

1 major traffic delays are planned. Thus, construction could also result in short-term impacts to area quality  
2 of life, as well as a short-term reduction in recreational visitors who may choose to avoid the area during  
3 construction.

4 During the operation and maintenance phase, one to two employees would be required to oversee project  
5 operation. As with construction, employees would likely be drawn from the existing local workforce.

6 Thus, Pipeline Alternative 1 would result in minor, localized, short-term, beneficial (employment) and  
7 adverse (quality of life) direct and indirect impacts to socioeconomics.

8 Depending on the timing of pipeline construction activities and other present and future actions  
9 (see Appendix A), there could be a cumulative impact to area quality of life from multiple projects  
10 affecting traffic along Houston Mesa Road and the other roads affected by Pipeline Alternative 1.  
11 The project may result in changes in the timing and patterns of development for northern Gila County  
12 communities. However, future development and growth is affected by a variety of factors unrelated to  
13 the project, including economic conditions and the availability of private land. Consequently, it is not  
14 possible to predict when, how, where, or to what extent development may occur. The necessary  
15 infrastructure to deliver water to additional customers is not a part of the proposed action. Assuming any  
16 road work planned for the future can be timed to avoid project-related construction activities in any given  
17 location, Pipeline Alternative 1 is not anticipated to measurably add to, or intensify, adverse  
18 socioeconomic impacts in the project area when added to the past, present, and reasonably foreseeable  
19 actions identified in Appendix A.

## 20 **ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE**

21 Pipeline Alternative 2 would have the same direct, indirect, and cumulative effects on socioeconomics as  
22 Pipeline Alternative 1.

## 23 **ALTERNATIVE 3 – GILA COUNTY ALIGNMENT ALTERNATIVE**

24 Pipeline Alternative 3 would have the same direct, indirect, and cumulative effects on socioeconomics as  
25 Pipeline Alternative 1.

## 26 ***Water Treatment Plant Alternatives***

### 27 **ALTERNATIVE WTP1 – SHOOFLY SOUTH**

28 During construction of Alternative WTP1, there would be a short-term increase in local employment.  
29 Construction of the pipeline would require an estimated 25 to 50 workers over the 18- to 24-month  
30 construction period. The project workforce would be expected to draw from the existing local  
31 construction workforce. Thus, construction could result in short-term benefits to the local economy as a  
32 result of construction-related expenditures and employment.

33 During the operation and maintenance phase, one to two employees would be required to oversee project  
34 operation. As with construction, employees would likely be drawn from the existing local workforce.

35 No travel restrictions are expected during construction of the proposed WTP.

36 No residential developments or individual residences are located adjacent to WTP1. Therefore, no  
37 impacts to property values or quality of life in terms of access to adjacent TNF lands are anticipated for  
38 WTP1. Thus, Alternative WTP1 would result in minor, localized, short-term, beneficial, direct and  
39 indirect impacts on socioeconomics.

## 1 **ALTERNATIVE WTP2 – HOUSTON MESA WEST**

2 Direct, indirect, and cumulative impacts to socioeconomics in terms of employment would be the same  
3 for Alternative WTP2 as for Alternative WTP1.

4 As described in Chapter 2, WTP2 would be located on a 10-acre parcel directly adjacent to the Mesa del  
5 Caballo subdivision. The west boundary of the WTP would be adjacent to nine lots (eight lots with homes  
6 and one vacant lot) within the subdivision, although facilities (storage tanks and the treatment plant itself)  
7 within the WTP footprint would be located 40 feet or more from the lots. As noted above, residents in  
8 private inholdings such as Mesa del Caballo value access to open space (i.e., TNF lands), and for these  
9 eight lots, direct access to the TNF would be eliminated. Additionally, construction and operation of the  
10 WTP would alter the landscape and views of these residents. Therefore, in addition to property value  
11 price fluctuations driven by other market considerations (i.e., location, size of the house, number of  
12 bathrooms, general condition, etc.), two of the characteristics of these nine lots (their access to the TNF  
13 and viewshed) would be affected and could reduce or otherwise influence the market value for the current  
14 owners of the eight lots adjacent to WTP2. Any transactions in the future would not be affected.

15 Thus, construction and operation of Alternative WTP2 would result in minor, localized, long-term,  
16 adverse direct impacts on socioeconomics, in terms of property value.

## 17 **ALTERNATIVE WTP3 – MESA DEL CABALLO SOUTH**

18 Alternative WTP3 would have the same direct, indirect, and cumulative effects on socioeconomics as  
19 Alternative WTP1.

## 20 **ALTERNATIVE WTP4 – TAILRACE SITE**

21 Alternative WTP4 would have the same direct, indirect, and cumulative effects on socioeconomics as  
22 Alternative WTP1.

## 23 **ALTERNATIVE WTP5 – 2100 NORTH BEELINE HIGHWAY**

24 Alternative WTP5 would have the same direct, indirect, and cumulative effects on socioeconomics as  
25 Alternative WTP1.

## 26 **ALTERNATIVE WTP6 – 1900 NORTH BEELINE HIGHWAY**

27 Alternative WTP6 would have the same direct, indirect, and cumulative effects on socioeconomics as  
28 Alternative WTP1.

## 29 **ALTERNATIVE WTP7 – PROPOSED ACTION**

30 Alternative WTP7 would have the same direct, indirect, and cumulative effects on socioeconomics as  
31 Alternative WTP1

## 32 ***Infrastructure Tie-Ins***

33 Impacts resulting from construction of the project infrastructure tie-ins would be similar to those  
34 described above for Pipeline Alternative 1, and as described in Recreation. Installation of buried pipelines  
35 for infrastructure tie-ins from the WTP to existing sewer and water distribution lines could generally  
36 result in short-term, temporary impacts to quality of life; however, the extent of the impacts cannot be  
37 determined until the final location of the WTP is chosen. No infrastructure tie-ins would be constructed

1 for WTP4 because there are no NGCSD sewer and Town water distribution system lines in the immediate  
2 vicinity of WTP4. Temporary impacts would only indirectly occur with WTP6 (in terms of temporary  
3 traffic delays along SR 87 in the vicinity of the WTP), which is located on privately owned land outside  
4 the TNF. There would be no long-term impacts to quality of life unless replacement of a tie-in or repairs  
5 are required. Thus, construction and operation of the infrastructure tie-ins is not anticipated to measurably  
6 add to, or intensify, adverse socioeconomic impacts in the project area when added to the impacts of the  
7 pipeline or WTP alternatives, as well as past, present, and reasonably foreseeable actions identified in  
8 Appendix A.

## 9 **Water Storage**

10 Presence of additional water storage capacity within the Town's water delivery system would increase the  
11 system's water delivery reliability during times of fluctuating water supply needs and during times of  
12 drought. When added to other past, present, and reasonably foreseeable future actions, this component  
13 specifically, and the proposed project in its entirety, would provide additional flexibility in the Town's  
14 ability to maintain service to its customers under a wide range of conditions.

## 15 **Mitigation**

- 16 • None.

## 17 **ENVIRONMENTAL JUSTICE**

### 18 **Affected Environment**

19 This analysis includes assessing the presence and percentage of minority and/or low-income populations  
20 in the study area and the distribution of benefits versus anticipated effects.

21 The EPA's Office of Environmental Justice (EPA 2003) defines environmental justice as

22 [t]he fair treatment and meaningful involvement of all people regardless of race, color, national  
23 origin, or income with respect to the development, implementation, and enforcement of  
24 environmental laws, regulations, and policies. Fair treatment means that no group of people,  
25 including racial, ethnic, or socioeconomic group[s] should bear a disproportionate share of the  
26 negative environmental consequences resulting from industrial, municipal, and commercial  
27 operations or the execution of federal, state, local, and tribal programs and policies.

28 Meaningful involvement means that 1) community residents in the potential impact area have an  
29 appropriate opportunity to participate in decisions about a proposed activity that will affect their  
30 environment and/or health; 2) the public's contribution can influence the regulatory agency's decision;  
31 3) the concerns of all participants involved will be considered in the decision-making process; and  
32 4) the decision-makers seek out and facilitate the involvement of those in the potential impact area  
33 (EPA 2003). Environmental justice is achieved when everyone, regardless of race, culture, or income,  
34 enjoys the same degree of protection from environmental and health hazards and has equal access to the  
35 decision-making process, in order to have a healthy environment in which to live, learn, and work  
36 (EPA 2003).

37 EO 12898 (February 11, 1994) and its accompanying memorandum have the primary purpose of ensuring  
38 that "each federal agency shall make achieving environmental justice part of its mission by identifying  
39 and addressing, as appropriate, disproportionately high and adverse human health or environmental

1 effects of its programs, policies, and activities on minority populations and low-income populations.”  
 2 To meet this goal, EO 12898 specified that each agency develop an agency-wide environmental justice  
 3 strategy.

4 There are no minority and/or low-income populations within the project area. The population of the Town  
 5 is 96% white; minority populations make up 4%, and the Hispanic/Latino population is 7% of the total  
 6 population (the sum of percentages given are not intended to equal 100%, as some of the race categories  
 7 are not mutually exclusive (e.g., *minority* or *Hispanic/Latino populations*). This is well below the  
 8 minority population breakdown at both the county and state levels, where the minority populations are  
 9 18% and 14%, respectively (Table 3.12). According to the U.S. Census Bureau, just over 5% of all  
 10 families within the Town had an income that was below the poverty level. By comparison, families that  
 11 had incomes below the poverty level made up about 12% and 11% of the families in Gila County and  
 12 Arizona, respectively (U.S. Census Bureau 2011b).

13 The Tonto Apache Reservation is located just south of the town of Payson. The Payson Water  
 14 Department delivers potable water to the Reservation through a Municipal Services Agreement between  
 15 the Tribe and Town.

16 **Table 3.12.** Local, Regional, and Statewide Minority Populations

	Arizona		Gila County		Town of Payson	
	No.	% State	No.	% County	No.	% Town
<b>Total population</b>	6,595,778	100%	52,199	100%	15,176	100%
<b>White</b>	5,677,252	86%	43,478	83%	14,504	96%
<b>Non-White</b>	918,526	14%	9,387	18%	672	4%
<b>Hispanic/Latino</b>	2,031,650	31%	8,989	17%	1,111	7%

17 Source: 2000 U.S. Census Bureau data.

## 18 Environmental Consequences

19 No disproportionately high or adverse impacts have been identified that are anticipated to occur within  
 20 the project area. While there are no environmental justice communities in the study area, the Tonto  
 21 Apache Reservation’s potable water supply is delivered by the Town. Regardless of the means by which  
 22 the Town incorporates reliability into its water delivery system, the benefits would be shared with all of  
 23 the Town’s customers, including the Tonto Apache Reservation.

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## 1 Chapter 4

### 2 LIST OF PREPARERS

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3 The following is a list of people that made contributions as ID Team members or as specialists to the  
4 Town of Payson–Cragin Pipeline Environmental Assessment analysis process and assessment document.

#### 5 U.S. Department of Agriculture Forest Service 6 Interdisciplinary Team

7  
8 Angela Elam – District Ranger, Payson Ranger District (RD)

9 Larry Hettinger – Project Coordinator, Payson RD

10 Kim VanderHoek – Landscape Architect, Tonto National Forest (TNF)

11 Denise Ryan – Archaeologist, Payson RD

12 John Wilcox – Biologist, Payson RD

13 Fred Wong – Biologist, TNF

14 Gary Hanna – Forest Highways Liaison, Payson RD

15 Larry Vogel – District Resource Staff, Payson RD

16 Delvin Lopez – Public Services Group Leader, TNF

17 Mark McEntarffer – Public Services Group Leader, TNF

18 Norm Ambos – Soil Scientist, TNF

19 Jamie Wages – Interim Range Staff, Payson RD

20 Genevieve Johnson – Forest Planner, TNF

21 Charles Denton – Ecosystem Staff Officer, TNF

22 Lynn Mason – Hydrologist, TNF

23 Grant Loomis – Hydrologist, TNF

24 Don Nunley – Fire Management Officer, Payson RD

25 Chris Thiel – Range Management Specialist Staff Officer, Payson RD

26 Dan Eckstein – Assistant Fire Management Officer, Payson PD

27 Kitty Tattersal – Forester, U.S. Department of Agriculture Forest Service

28 Steve Sanders – Public Works Division Deputy Director, Gila County

29 Sandy Eto – Environmental Protection Specialist, Bureau of Reclamation

30 Alex Smith – Wildlife Biologist, Bureau of Reclamation

31 Chuck Paradzick – Senior Environmental Scientist, Salt River Project

- 1 **SWCA Environmental Consultants**
- 2
- 3 Ken Houser – Managing Principal
- 4 Cara Bellavia – Project Manager
- 5 Ryan Rausch – Environmental Planner
- 6 Adrienne Tremblay – Archaeologist
- 7 Chris Garrett – Hydrologist
- 8 Eleanor Gladding – Biologist
- 9 DeAnne Rietz – Environmental Specialist
- 10 Devin Keane – Environmental Specialist
- 11 Sara Ferland – Cultural Resources Specialist
- 12 Chris Query – Geographic Information System Specialist
- 13 Camille Ensle – Publication Specialist
- 14 Heidi Orcutt-Gachiri – Technical Editor
- 15 Jessica Maggio – Publication Specialist

## Chapter 5

### CONSULTATION AND COORDINATION

#### SCOPING PROCESS

The Forest Service conducted public scoping for this EA between August 4, 2009, and September 9, 2009, to provide project description information and to receive public input on the proposed project. The scoping meeting was advertised in a variety of formats, including project notices at the TNF; scoping mailers and public notices to the stakeholder list; and hard copies left at the Mesa Del Caballo, Freedom Acres, Beaver Valley, Wonder Valley, Rim Trail Estates, Washington Park, and Verde Glen public notice boards. Meetings were advertised at least 2 weeks prior to the scheduled meeting date. In each format, the advertisements provided meeting logistics and explained the purpose of the public meetings, gave the schedule for the public comment period, outlined additional ways to comment, and provided methods of obtaining additional information.

On August 26, 2009, an “Open House” was held in the gymnasium of Julia Randall Elementary School at 902 West Main Street in Payson. The meeting was held to provide information to the public on the Proposed Action (at the time of scoping, the proposed action was pipeline Alternative 1 and WTP1), give the public an opportunity to voice its issues and concerns, and have questions answered regarding the project. Project personnel from the Payson Ranger District and the Town hosted the meeting. The meeting featured an open house format, with project-related information in the form of boards and handouts. Comment forms were made available for public input. In total, 23 members of the public attended the meeting. Project comments from the public, including any issues and concerns, were all provided in written format (and are described in Chapter 1).

A total of approximately 40 people commented on the project via comment forms at the meeting and via email or letter. In general, the comments expressed project support as well as comments regarding water resources, socioeconomic impacts, and air quality, as discussed in Chapter 1.

#### Consultation with Others

The Forest Service consulted the following individuals, federal, state, and local agencies, tribes, and non-Forest Service persons during the development of this EA:

**Federal Agencies:**

Bureau of Reclamation

U.S. Fish and Wildlife Service

**State/County/Local Government:**

Arizona State Historic Preservation Office

Arizona Game and Fish Department

Gila County

**Tribes:**

Tonto Apache Tribe

Fort McDowell Yavapai Nation

Pueblo of Zuni

Yavapai Prescott Tribe

Yavapai-Apache Nation

San Carlos Apache Tribe

White Mountain Apache Tribe

Salt River Pima-Maricopa Indian Community

Hopi Tribe

Gila River Indian Community

**Individuals/Organizations**

Greg Potter, Principal and Vice President, Sunrise Engineering

Garrett Goldman – Engineering Director, TetraTech

Steven Nowaczyk – Senior Geotechnical Engineer,

Ninyo and Moore

Marek Kasztalski – Principal Engineer, Ninyo and Moore

Steven Dosh – Archaeologist, Northland Research

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## Chapter 6

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