

**ARIZONA GAME AND FISH DEPARTMENT  
HABITAT PARTNERSHIP COMMITTEE  
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

Game Branch / HPC Project Number: 13-104

**PROJECT INFORMATION**

**Project Title:** West Pigeon Water Development Project

**Region and Game Management Unit:** Region 1 / GMU 27

**Local Habitat Partnership Committee (LHPC):**

- Safford HPC

**Was the project presented to the LHPC?**

YES[X] NO[]

**Has this project been submitted in previous years?** YES[X] NO[]

**If Yes, was it funded?** YES[] NO[X]

\*Was directed that project be broken into several phases for funding. → **HPC Project #:**

**Project Type:** Water Development – New

**Brief Project Summary:**

The purpose of this water system is primarily to provide perennial water to mule deer, whitetail deer, turkey, bear, and a variety of other native wildlife (game as well as non-game species). The secondary use of this project will be to have better control of livestock distribution when these pastures are seasonally occupied by livestock. The drinkers will be filled and water available year round by the permittee, AZGFD, or the USFS. This pipeline will carry water to support 2 storage tanks and 5 drinkers distributed throughout the Pigeon and HL Canyon pastures of the Pigeon allotment on the Clifton Ranger District.

I was asked last year to break this project into several phases for implementation. Phase A of this project will be the acquisition of the pipe, drinkers, vents, fittings, and miscellaneous hardware required for the project. The supplies will be stored at the T-Link headquarters, or at the USFS Clifton Ranger District. Phase B will be to fly in the storage tanks, and level them. Also in Phase B will be to distribute supplies at the project location. Phase C will be the final installation of the materials and filling of the storage tanks and drinkers.

Funding is requested for Phase A in 2013/2014, though the entire project is submitted for clarity and completeness.

**Big Game Wildlife Species to Benefit:** Mule Deer(40%), Whitetail Deer(35%), Turkey(10%), all other game and nongame species(15%).

**Implementation Schedule** (Month/Day/Year):

Project Start Date: April 2014

Project End Date: T.B.D.

**Environmental Compliance:**

NEPA Completed: YES[X] No[] N/A[]

Projected Completion Date: Per USFS Categorical Exclusion -  
September 15, 2010

State Historic Preservation Office - Archaeological Clearance:

YES[X] No[] N/A[]

Projected Completion Date: Per USFS Categorical Exclusion -  
September 15, 2010

Arizona Game and Fish Department EA Checklist: N/A[]

To be Completed by: Joyce Francis- extension in 2013

Projected Completion Date: T.B.D./project completion

<b>PROJECT FUNDING</b>		
<b>Special Big Game License Tag Funds Requested:</b>	<b>\$ 69,485.24 Phase A; of \$97,696.00 total</b>	
<b>Cost Share or Matching Funds:</b>	\$ 170,640.00 total to date	
<b>Total Project Costs:</b>	\$ 268,336.00	
<b>PARTICIPANT INFORMATION</b>		
<b>Applicant</b> (please print): Steve Najjar Wildlife Manager II, Unit 27 South	<b>Address:</b> 2878 E. White Mountain Blvd. Pinetop, AZ 85935	<b>E-mail:</b> <a href="mailto:snajar@azgfd.gov">snajar@azgfd.gov</a>
<b>Telephone:</b> 928-965-5066		<b>Date:</b> August 28, 2013
<b>AGFD Contact and Phone No.</b> (If applicant is not AGFD personnel):		
<b>Project has been coordinated with:</b> AZGFD, USFWS, NRCS, USFS Clifton Ranger District, Robert L. Fletcher/ T-Link Ranches		

**NEED STATEMENT – PROBLEM ANALYSIS:**

This project was designed to augment/add to the Pigeon Restoration Project, which was a combination of mechanical thinning and a landscape scale prescribed burn. Monies for this project have come from AZGFD ACCESS dollars that were given back to the Department by T-Link Ranches, and LIPP dollars that were also used by the landowner for this project, along with additional private funding by T-Link Ranches (total match to date: \$160,640.00, which includes ACCESS, LIPP, Heritage/IIAPM and private monies). Domenic Barrett, USFWS, has already funded one drinker (Drinker #5), and the necessary pipe, valves, fittings, etc... needed on the private land to begin the pipeline with USFWS project monies. This was funded in the amount of \$5,000.00 which would bring the total match monies to date up to **\$165,640.00** This leaves the four drinkers on USFS land that still need to be installed. The desired outcome will be to provide yearlong dependable water sources to the west side of the Pigeon Allotment for mule deer, whitetail, turkeys, bear, javelina, quail, and other game and nongame species.

This area has been highly dependent upon summer monsoon moisture and winter moisture contained in dirt tanks in the past. No dependable year round water sources have historically been available. T-Link Ranches has already done extensive repairs and maintenance of existing range improvements; such as improving fences and cleaning dirt tanks. The Pigeon Restoration Project achieved excellent results for wildlife habitat through the use of prescribed burning. Thus, the last remaining factor to greatly enhance wildlife values in this area is to provide a dependable water system.

The well on private land is complete, and the pump and a diesel generator are already in place. A private company has already donated two (2) storage tanks that will hold approximately 3,200 gallons each to the project. All that is left is to install the pipe and drinkers to finalize the implementation of this project.

NRCS – Safford District was consulted for assistance with the engineering necessary for project implementation. All materials and plans meet the NRCS standards. The formal project plans are available through the Safford office, and will be used during installation of the water system. Pages from the engineering plan are attached as Appendix 1.

**PROJECT OBJECTIVES:**

The purpose of this water system is primarily to provide perennial water to mule deer, whitetail deer, turkeys, bear, and a variety of other native wildlife (game as well as non-game species). The secondary use of this project will be to have better control of livestock distribution when these pastures are seasonally occupied by livestock, thus improving overall conditions of herbaceous and browse plant species throughout the entire year.

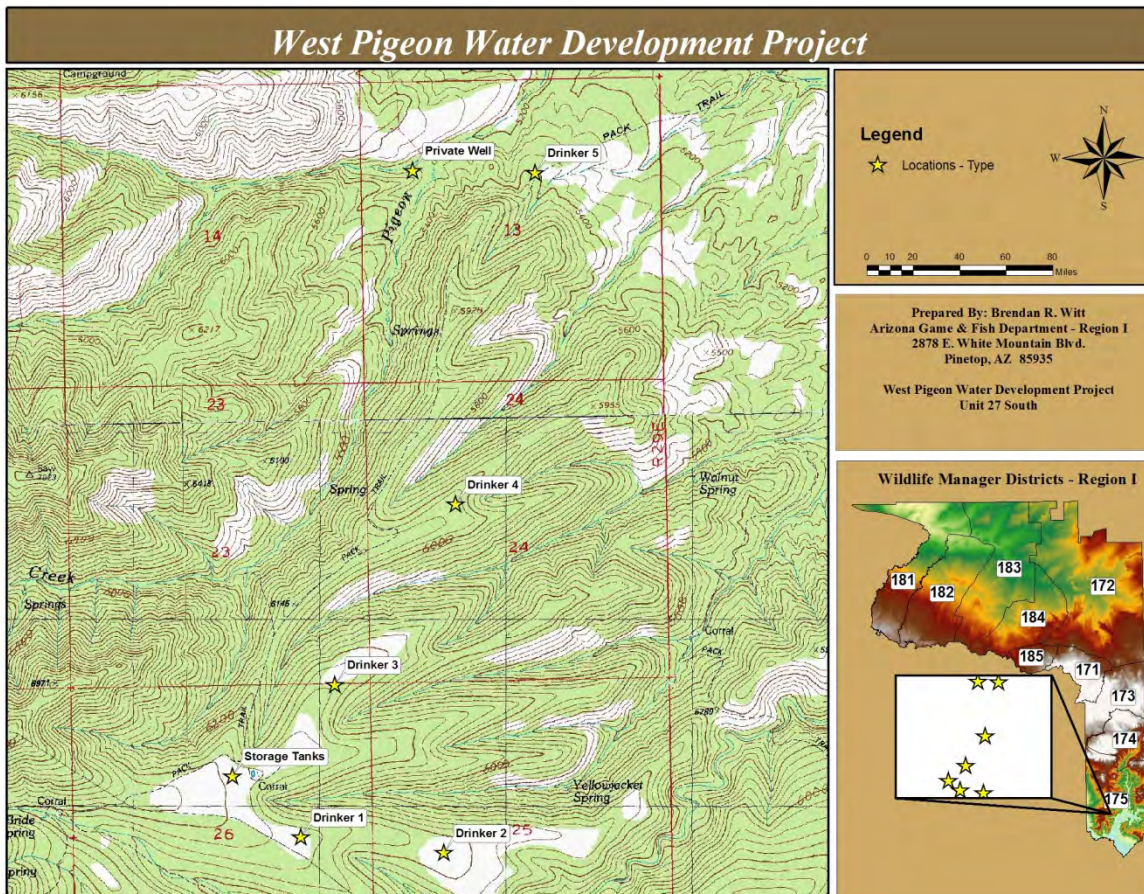
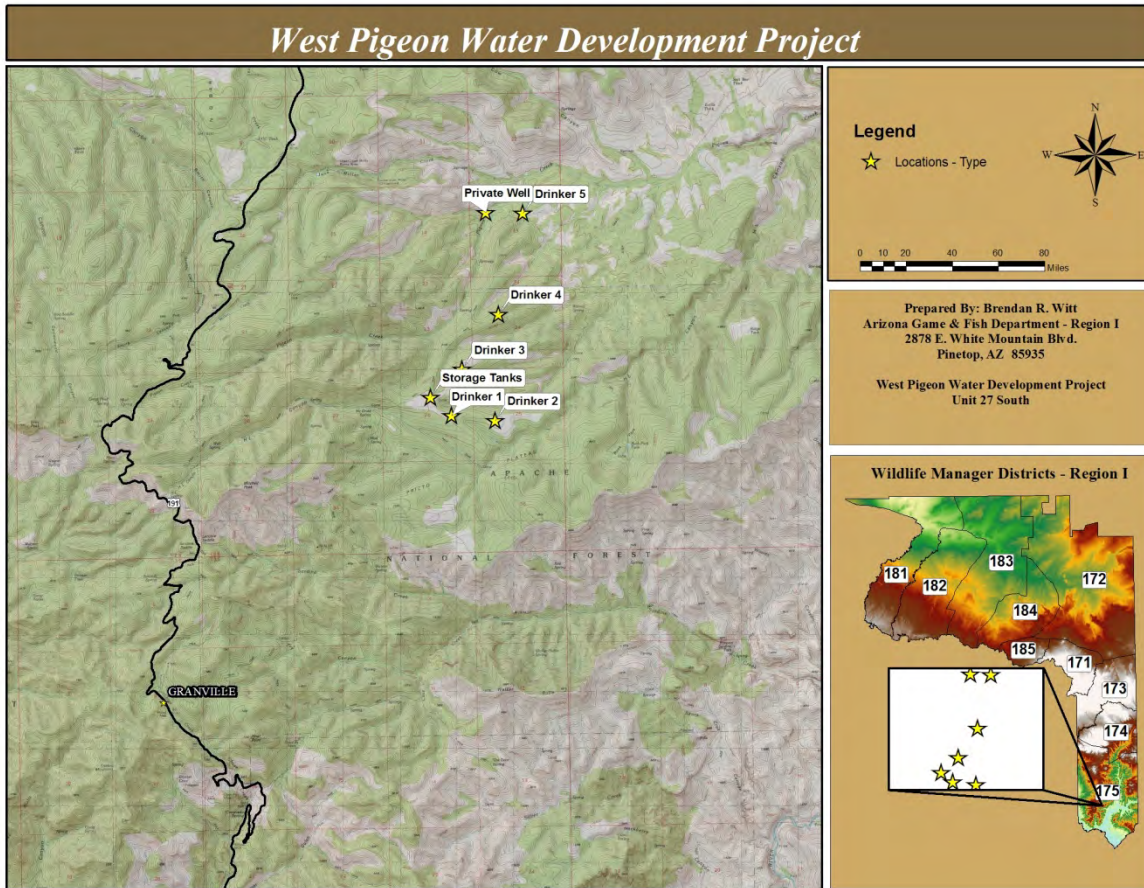
**PROJECT DESCRIPTION AND STRATEGIES:**

A well that is located on private land will provide water to approximately 6.5 miles of surface pipeline. This pipeline will carry water to support 2 double-walled storage tanks (**already donated to this project by a private company, approximately 3,200 gallons each valued @ \$40,000.00**) and 4 drinkers distributed throughout the Pigeon and HL Canyon pastures of the Pigeon allotment on the Clifton Ranger District. The pipeline would primarily follow existing FS road #475C to a spot near Wing Tank where the storage tanks will be placed. The storage tanks will be flown to their location by helicopter, thus saving the expense of making the road into the location accessible to trailers. Improvements to the existing road just to enable placement of the two storage tanks would not be cost effective and would be outside the scope of this project. From the storage tanks the pipeline would then continue along the ridgelines with drinkers spaced approximately every ½ mile to 1 mile apart. The permittee will maintain water in all troughs year round and will be responsible for the future maintenance of the system.

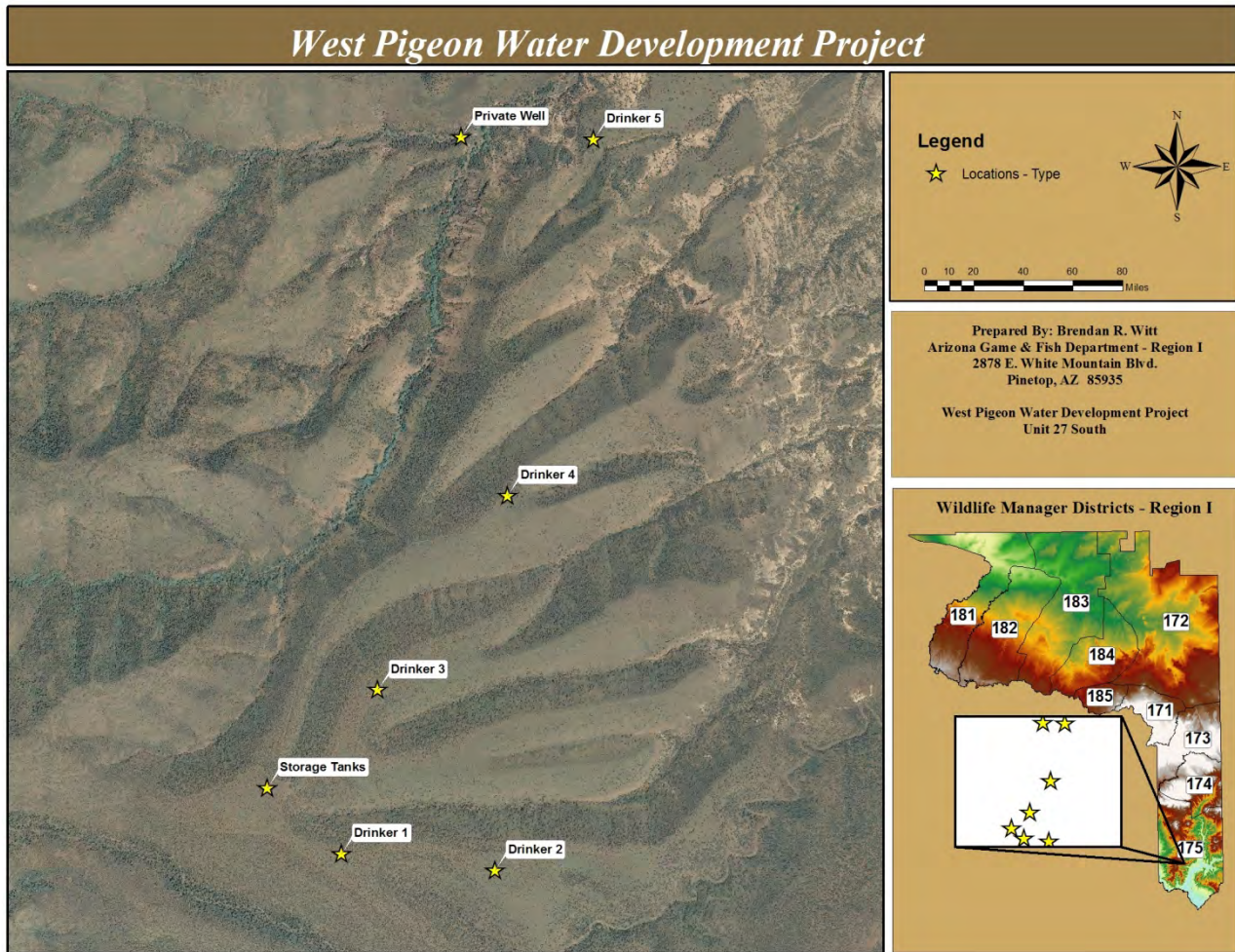
**PROJECT LOCATION:**

TOWNSHIP	RANGE	SECTION
2S	31E	4,9,16









**LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):**

USFS – Clifton Ranger District; T-Link Ranches – USFS Permittee

*IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP or LANDOWNER AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?*

YES[X] NO[]

**Permission has been granted by the permittee to access and use the well on private land whenever needed for wildlife purposes (attached).**

**HABITAT DESCRIPTION:**

The project area is primarily Madrean pine-oak woodland, with some semi-arid desert grassland associated along the ridge tops. This area has the potential to carry large numbers of wildlife, and has responded well to the Pigeon Ecosystem Restoration Project prescribed burn. The limiting factor in this area at present time is reliable water sources.

**ITEMIZED USE OF FUNDS:**

Special Big Game License Tag Funds\*

4 – H/W steel livestock trough (10’ x 30” wide x 24” deep) (Liberty Fence Supply, Show Low, AZ)	@ \$276.93 each = \$1,107.72
4- ¾ “ bronze float valve assembly (Grainger’s, Phoenix, AZ)	@ \$84.00 each = \$ 336.00
4- 1” brass ball valves (Grainger’s, Phoenix, AZ)	@ \$30.00 each = \$ 120.00

**Total drinker costs = \$1563.72**

14,012 feet 1 ¼” Galvanized Steel Schedule 40 pipe (Liberty Fence & Supplies – Show Low, AZ)	@ \$1.54/ft = \$ 21,578.48
1,533 feet 2” HDPE PE 4710 DR-5 500 psi pipe (Allen Pump Company – Thatcher, AZ)	@ \$2.26/ft = \$ 3,464.58
10,568 feet 1” HDPE PE 4710 DR-11 200 psi pipe	@ \$3.55/ft = \$ 37,516.40
4,463 feet 1” HDPE PE 4710 DR-9 250 psi pipe	@ \$0.42/ft = \$ 1,874.46
1,130 feet 1” HDPE PE 4710 DR-7 333 psi pipe	@ \$0.52/ft = \$ 587.60

**Total pipe costs = \$ 65,021.52**

Recommended pipe fusion kit @ \$300.00 = \$ 400.00

Miscellaneous pipe fittings/ plumbing parts/ supplies \$ 2,500.00

\*Pipe and other materials pricing based on the estimates (callbacks) received prior to deadline for submission of project proposal. Several vendors were used in order to obtain realistic estimates. Actual prices should be within this range of estimates. Materials list also based upon NRCS specifications. Galvanized Steel Schedule 40 pipe could be bought in quantity and substituted for 2” polyvinyl pipe.

**Total - pipeline and drinkers = \$69,485.24**

Helicopter Time

Bell 407, Ferry @ \$1,000.00/ hour x 4 hours round trip	= \$4,000.00
Work @ \$1,800.00/ hour x 2 hours	= \$3,600.00

**Total helicopter costs = \$7,600.00**

D-4 Dozer\* (cost estimate from B.L.M.; AGFD Development Branch. Based on 10 rolls per day @ 500 feet per roll = 5,000 feet per day)

50 gallons (\$4.85/gallon) = \$242.50 fuel
2 men @ \$30.00/hour (8 hour day) = \$480.00
242.50 + 480.00 / mile [722.50/5280 = \$.137/ linear foot installation cost]
\$.42 / linear foot pipe 5280 feet (.42) = \$2217.60
.42 + .137 = \$.556 / linear foot actual cost

**Total cost per mile = \$2,940.00 x 6.5 miles = Approx. \$19,110.00**

\*Estimate based on costs for D-4 Dozer to *bury* pipe. Costs expected to be similar due to ferry time/miles, terrain, and remote location. Use of steel pipe will reduce dozer time, but increase man-hours needed for installation. Estimate is given as an approximation of installation costs.

Installation of drinkers: transport/leveling/assembly/adjustments approx =**\$1,500.00**

**Total project costs expected to be approximately: =\$97,696.00**

#### Cost Share or Matching Funds

Access/donated back to project by T-Link Ranches (\$44,000.00)

LIPP (51,545)

Heritage/ IIAPM (\$10,000)

Private money from T-Link Ranches (20,095.00)

Donation of the two storage tanks (\$40,000.00), *name withheld by request.*

**Total \$165,640.000 match, has already been used by the Department and the landowner for this project.**

**Additional \$5,000.00 from USFWS was used for drinker and piping on private land.**

#### **LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:**

Region I personnel, and AZGFD Development Branch, will provide logistical support in the construction and will continue to coordinate with the USFWS, USFS, NRCS and the permittee. Construction photo points will be established and a completion report will be on file following installation and construction.

NEPA and Archeological surveys have already been completed by the US Forest Service – Clifton Ranger District.

Permission has been granted by the permittee to access and use the well on private land whenever needed for wildlife purposes (attached).

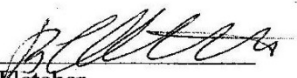
March 7, 2011

USDA - Forest Service  
Clifton Arizona District  
Arizona Fish and Game

This letter authorizes the Forest Service Clifton District ("FS") and the Arizona Fish and Game Department ("F&G"), at their expense, to pump and use water from the Fletcher WJ well located on private property, HES-488, located on the Pigeon Allotment, Forest Service Clifton District, Greelee County, Arizona. The well and the private property are owned by T-Link Ranches, Inc. ("T-Link").

This authorization run's concurrently with the ten year Forest Renewal permit issued to T-Link, and will terminate when the current Forest Renewal permit terminates. This authorization can only be renewed by mutual agreement of the FS, F&G and T-Link. This authorization does not transfer or give water rights to any party. T-Link retains all of its existing well and water rights.

This well may be used by FS and F&G only to pump water up to storage tanks at Wing Tank, with drinker lines running away from the tanks to supply water for livestock and wildlife.

  
\_\_\_\_\_  
Bob Fletcher  
President, T-Link Ranches

\_\_\_\_\_  
Forest Service

\_\_\_\_\_  
Fish & Game Department



E-mail regarding Ammendment to extend E. A. Checklist Documentation Dated 8/28/2013

Hi Steve,

Just wanted to let you know that Joy approved the amendment for the new funding, pending HPC approval, and extended timeframe for the project. If anything else should change (i.e. scope of work, funding, etc.), please contact PEP so we can ensure you are properly covered from the compliance end of things.

Thanks,

*Ginger Ritter*

*Project Evaluation Program Specialist*

Phone: 623-236-7606

Fax: 623-236-7366

Arizona Game and Fish Department-WMHB  
5000 West Carefree Highway  
Phoenix, Arizona 85086



If you want to learn ways to get connected to the outdoors, visit <http://www.azgfd.gov/getoutside> .

***Sign up for enews:***

*Receive the latest news and information on wildlife issues and events, outdoor tips, education programs, regulations, and more...*

<http://www.azgfd.gov/eservices/subscribe.shtml>

Habitat Branch Log #: M11-05161610  
Amendment 1

**ARIZONA GAME AND FISH DEPARTMENT  
AMENDMENT MEMO**

**TO:** Joyce Francis, Habitat Branch Chief

**FROM:** Steve Najar, Wildlife Manager III, Unit 27 South

**THROUGH:** Ginger Ritter, Project Evaluation Program Specialist

**SUBJECT:** Amendment 1 to EAC #M11-05161610 – West Pigeon Water Development Project

**DATE:** August 27, 2013

I am proposing a few minor modifications to the existing EAC, West Pigeon Water Development Project (#M11-05161610). Proposed modifications are new funding sources and extension of the planned completion dates.

**FUNDING SOURCE:**

1. New, additional funding sources have been identified for this project:

<b>FUNDING TYPE:</b> <input checked="" type="checkbox"/> USFWS Federal Aid <input type="checkbox"/> Federal (Other) <input checked="" type="checkbox"/> State <input type="checkbox"/> Other <input type="checkbox"/> No AGFD Funding Used	<b>FUNDING SOURCE NAME(s) &amp; INDEX #(s):</b> (select appropriate fund & remove the rest) <ul style="list-style-type: none"><li>• PR Grant (PR, CMS) – Original EAC</li><li>• Special Tag Fund (STF) – New</li></ul>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**PROJECT MONITORING PLAN:**

Construction photo points will be established and a completion report will be on file following construction.

**PROJECT MAINTENANCE:**

The permittee will maintain water in all troughs year round and will be responsible for the future maintenance of the system.

**PROJECT COMPLETION REPORT TO BE FILED BY:**

Steve Najar - Wildlife Manager II, Unit 27 South  
928-965-5066

**WATER DEVELOPMENT PROJECTS** (*see attached worksheet*):

**TREE SHEARING (AGRA-AXE, PUSH) PROJECTS** (*see attached worksheet*):

N/A

**ARIZONA GAME AND FISH DEPARTMENT**  
**WATER DEVELOPMENT WORKSHEET**

**PROJECT NAME:** West Pigeon Water Development Project

- 1) **Is the water development listed as a priority in the most recent “Wildlife Water Development Annual Implementation Schedule?”**  
No.
  
- 2) **Please list the Development Branch personnel and date coordinated with for this project.**  
Planning assistance provided by Ed Jahrke, Joe Currie, Mark, Davis. August 2011
  
- 3) **What is the estimated annual inches of precipitation for the area? (mark one)**  
2-4 4-6 6-8 8-10 10-12 12-14 14-16  >16
  
- 4) **Is there a perennial water source available to big game within four miles of this project?**  
  
YES (please complete #5 below) NO (skip #5 below)
  
- 5) **For the accessible, perennial water source nearest this project:**  
Name of water source: Turkey Creek  
Type of water source (catchment, spring, dirt tank): Perennial stream  
Ownership of water source: USFS  
Distance in miles from project: 3.5 miles
  
- 6) **Is the target wildlife species a result of transplant efforts?** YES NO
  
- 7) **Please list any special land management status for the project site (i.e. Wilderness, National Park, National Monument). If private land, list landowner.**

Permission has been granted by the permittee (Robert L. Fletcher, T-Link Ranches) to access and use the well on private land whenever needed for wildlife purposes (attached).

- 8) **Please provide the following information about access to the proposed site:**  
Type of access (mark one): 2x4 vehicles 4x4 only foot only\*\*  
\*\*If foot access only: Distance in miles: \_\_\_\_\_ Approximate hiking time: \_\_\_\_\_



-- Does access to this site require crossing private or tribal lands? YES[X] NO[]

-- Please describe any restrictions to public access:

General public is not allowed on the private property. Permission has been granted to AGFD and USFS by the permittee to access use the well on private land whenever needed for wildlife purposes (attached).

**9) Please list below (or on a separate sheet) the material type and dimensions of each component proposed to be added, modified, or repaired.**

4 – H/W steel livestock trough (10’ x 30” wide x 24” deep) (Liberty Fence Supply, Show Low, AZ)	@ \$276.93 each = \$1,107.72
4- ¾ “ bronze float valve assembly (Grainger’s, Phoenix, AZ)	@ \$84.00 each = \$ 336.00
4- 1” brass ball valves (Grainger’s, Phoenix, AZ)	@ \$30.00 each = \$ 120.00

**Total drinker costs = \$1563.72**

14,012 feet 1 ¼” Galvanized Steel Schedule 40 pipe (Liberty Fence & Supplies – Show Low, AZ)	@ \$1.54/ft = \$ 21,578.48
1,533 feet 2” HDPE PE 4710 DR-5 500 psi pipe (Allen Pump Company – Thatcher, AZ)	@ \$2.26/ft = \$ 3,464.58
10,568 feet 1” HDPE PE 4710 DR-11 200 psi pipe	@ \$3.55/ft = \$ 37,516.40
4,463 feet 1” HDPE PE 4710 DR-9 250 psi pipe	@ \$0.42/ft = \$ 1,874.46
1,130 feet 1” HDPE PE 4710 DR-7 333 psi pipe	@ \$0.52/ft = \$ 587.60



**Total pipe costs = \$ 65,021.52**

**10) Was a site visit completed? Yes[X] No[]**

If Yes, please list personnel that attended and date.

Steve Najar, AZGFD and Donna Reed USFS, Clifton Ranger District; April 2010

Steve Najar, AZGFD and Scott Stratton NRCS, Safford; August 2013.

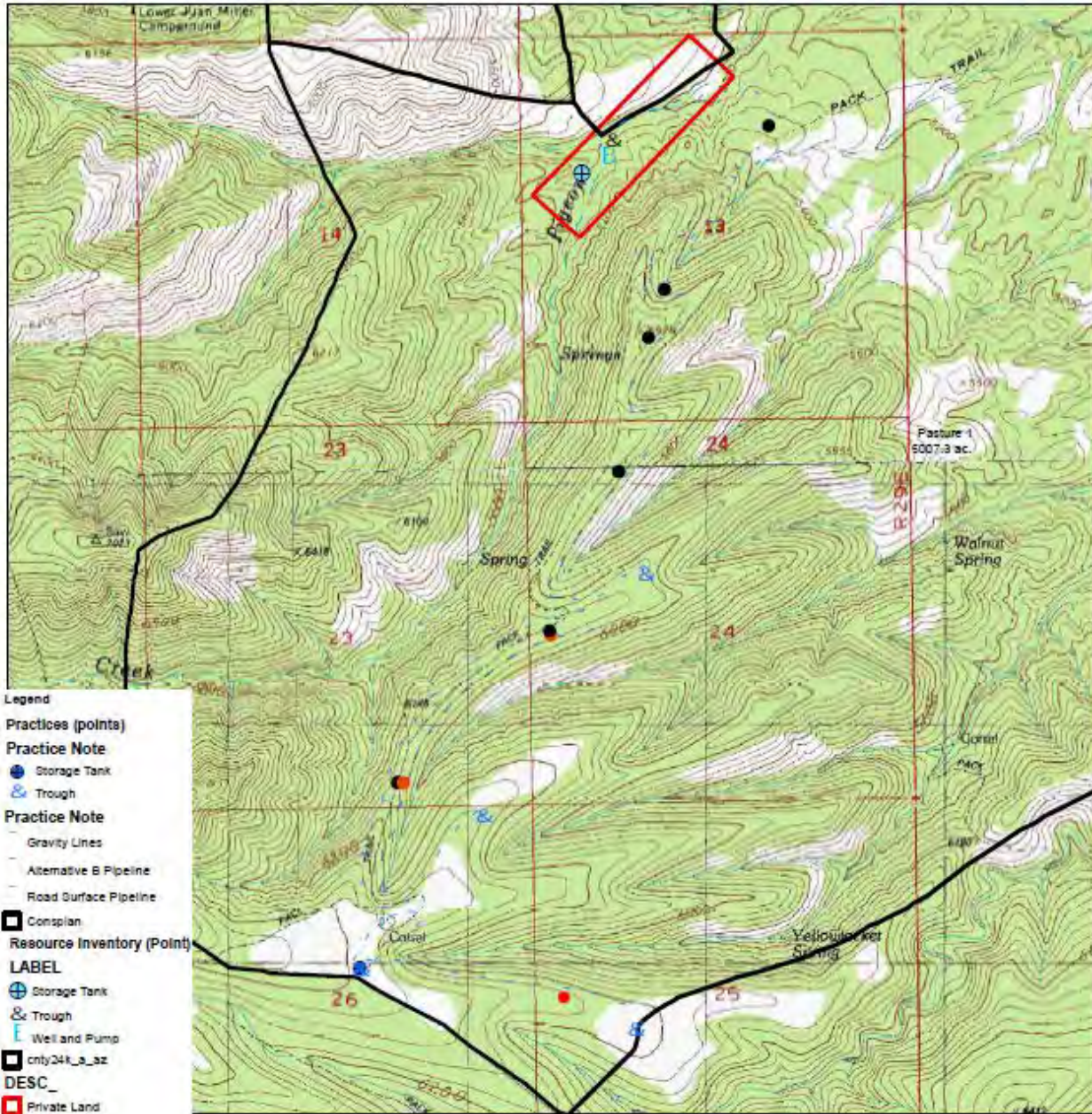
 <p style="text-align: center;"><b>Project Location</b></p> <p style="text-align: center;">ARIZONA</p>	<p style="text-align: center;"><b>CONSTRUCTION (AS-BUILT) INFORMATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>CONTRACTOR:</b></td> <td></td> </tr> <tr> <td><b>CONSTRUCTION COMPLETION DATE:</b></td> <td></td> </tr> <tr> <td><b>PROJECT ID#:</b></td> <td></td> </tr> </table>	<b>CONTRACTOR:</b>		<b>CONSTRUCTION COMPLETION DATE:</b>		<b>PROJECT ID#:</b>		<p style="text-align: center;"><b>Conservation Technical Assistance Program</b>                  Arizona Game And Fish Department  <b>PREPARED FOR:</b>                  GILA VALLEY NRCD  <b>PREPARED BY:</b>                  UNITED STATES DEPARTMENT OF AGRICULTURE                  NATURAL RESOURCES CONSERVATION SERVICE</p>																
<b>CONTRACTOR:</b>																								
<b>CONSTRUCTION COMPLETION DATE:</b>																								
<b>PROJECT ID#:</b>																								
<p><b>ARIZONA STANDARDS AND SPECIFICATIONS:</b></p> <p><b>229 Pumping Plant</b></p> <ul style="list-style-type: none"> <li>a. CS AZ 44 &amp; MS AZ 547 Plastic Pipe</li> <li>b. CS AZ 22 &amp; MS AZ 224 Steel Pipe</li> <li>c. CS AZ 22 &amp; MS AZ 224 Valve and Manhole</li> </ul> <p><b>514 Irrigation Facility</b></p> <ul style="list-style-type: none"> <li>a. CS AZ 26 &amp; Tech Note AZ 2-3 Sludge</li> </ul> <p><b>General Construction</b></p> <ul style="list-style-type: none"> <li>a. CS AZ 91 (Excavator)</li> <li>b. CS AZ 23 Earth</li> <li>c. CS AZ 00 Clearing and Grubbing</li> <li>d. CS AZ 05 Pile/Post Cuts</li> <li>e. CS AZ 06 Mobilization and Demobilization</li> </ul>	<p><b>INDEX OF DRAWINGS</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SHEET NO.</th> <th>TITLE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CONTRACT &amp; LOCATION MAP</td> </tr> <tr> <td>2</td> <td>PLAN VIEW</td> </tr> <tr> <td>3</td> <td>PROFILE: Pumped Pipeline</td> </tr> <tr> <td>4</td> <td>PROFILE: Trough #1 Pipeline</td> </tr> <tr> <td>5</td> <td>PROFILE: Trough #2 Pipeline</td> </tr> <tr> <td>6</td> <td>PROFILE: Trough #3 Pipeline</td> </tr> <tr> <td>7</td> <td>DETAILS: Pipe-Discharge</td> </tr> <tr> <td>8</td> <td>DETAILS: Pipe and Vents</td> </tr> <tr> <td>9</td> <td>DETAILS: Steel Pipe Storage Cais</td> </tr> <tr> <td>10</td> <td>DETAILS: Submerged Trough</td> </tr> </tbody> </table>	SHEET NO.	TITLE	1	CONTRACT & LOCATION MAP	2	PLAN VIEW	3	PROFILE: Pumped Pipeline	4	PROFILE: Trough #1 Pipeline	5	PROFILE: Trough #2 Pipeline	6	PROFILE: Trough #3 Pipeline	7	DETAILS: Pipe-Discharge	8	DETAILS: Pipe and Vents	9	DETAILS: Steel Pipe Storage Cais	10	DETAILS: Submerged Trough	<p><b>GENERAL NOTES</b></p> <p>IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO OBTAIN ALL NECESSARY CLEARANCES, PERMITS, RIGHT OF WAY, EASEMENTS, AND TO COMPLY WITH ALL ORDINANCES AND LAWS PERTAINING TO THE CONSTRUCTION OF THIS PROJECT.</p> <p>THE PARTICIPANT ASSURES THE USNRCS THAT THE PROGRAM OR ACTIVITIES PROVIDED UNDER THIS AGREEMENT WILL BE CONDUCTED IN COMPLIANCE WITH ALL FEDERAL, STATE, LOCAL, AND TRIBAL LAWS, REGULATIONS, AND POLICIES.</p> <p>IT SHALL BE THE RESPONSIBILITY OF THE COOPERATOR TO ENSURE THAT THE PROJECT IS CONSTRUCTED ACCORDING TO THE ATTACHED DRAWINGS, SPECIFICATIONS AND SPECIAL REQUIREMENTS. ANY SIGNIFICANT CHANGES THAT AFFECT THE SCOPE OR COMPLEXITY OF THE PROJECT SHALL BE SUBMITTED, IN WRITING, TO THE NRCS THREE (3) WORKING DAYS PRIOR TO IMPLEMENTATION FOR APPROVAL.</p> <p>ALL EXISTING CONDITIONS ARE TO BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY ADJUSTMENTS FROM THE DRAWINGS ARE TO BE MADE AS DIRECTED BY THE AGENCY APPROVING OFFICIAL.</p> <p>ALL STATIONING REFERS TO BASELINE OF CONSTRUCTION AND IS MEASURED PERPENDICULAR DISTANCES. SURVEY POINTS ARE ONLY TIED TO LOCAL BENCHMARKS AND ARE NOT RELATED TO ANY FEDERAL ESTABLISHED BENCHMARKS OR SURVEYED GRID SYSTEM. NRCS WILL BE NOTICED THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION.</p> <p>MAINTENANCE OF THE INSTALLED WORK IS NECESSARY FOR PROPER PERFORMANCE DURING THE PROJECT LIFE.</p> <p style="text-align: center;"><b>LOCATION OF UTILITIES</b></p> <p>NRCS MAKES NO REPRESENTATIONS TO THE EXISTENCE OR ACQUISITION OF ANY UTILITIES, PUBLIC OR PRIVATE. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING AND COORDINATING THE WORK WITH ALL UTILITY COMPANIES.</p> <p>CONTRACTOR SHALL ALSO CALL ARIZONA BLUE STAKE AT 1-800-789-5348.</p> <p>IT IS THE RESPONSIBILITY OF LANDOWNERS, OPERATORS AND CONTRACTORS TO COMPLY WITH THE PROVISIONS OF ARIZONA STATE LAWS. LANDOWNERS, OPERATORS AND CONTRACTORS WILL BE LIABLE FOR ANY DAMAGE RESULTING FROM DISRUPTION OF SERVICE CAUSED BY CONSTRUCTION ACTIVITIES.</p>
SHEET NO.	TITLE																							
1	CONTRACT & LOCATION MAP																							
2	PLAN VIEW																							
3	PROFILE: Pumped Pipeline																							
4	PROFILE: Trough #1 Pipeline																							
5	PROFILE: Trough #2 Pipeline																							
6	PROFILE: Trough #3 Pipeline																							
7	DETAILS: Pipe-Discharge																							
8	DETAILS: Pipe and Vents																							
9	DETAILS: Steel Pipe Storage Cais																							
10	DETAILS: Submerged Trough																							
 <p style="text-align: center;"><b>Project Location</b></p> <p>Project Location T25, R20E, Sections 13, 24, 25, and 26</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>Arizona Standard Drawing</b></td> <td style="width: 50%;"></td> </tr> <tr> <td><b>Cover Sheet 3 Construction App</b></td> <td></td> </tr> <tr> <td><b>Standard Drawing No. AR-009-01-03</b></td> <td></td> </tr> <tr> <td><b>Date March 2013</b></td> <td><b>Sheet 1 of 1</b></td> </tr> </table>	<b>Arizona Standard Drawing</b>		<b>Cover Sheet 3 Construction App</b>		<b>Standard Drawing No. AR-009-01-03</b>		<b>Date March 2013</b>	<b>Sheet 1 of 1</b>	<p><b>ACKNOWLEDGE:</b>                  (REPRESENTATIVE OF AGENCY)                  I HAVE REVIEWED THE PLANS AND SPECIFICATIONS AND UNDERSTAND MY OPERATION AND MAINTENANCE RESPONSIBILITIES. I ACCEPT AND APPROVE THEM FOR CONSTRUCTION OF THIS PROJECT.</p> <p>SIGNATURE: _____ DATE: _____</p> <p>TITLE: _____</p> <hr/> <p><b>CERTIFICATION:</b>                  (CLIENT/CONTRACTOR)                  THIS PRACTICE MEETS APPLICABLE ARIZONA STANDARDS, SPECIFICATIONS AND REPRESENTS AS-BUILT CONDITIONS.</p> <p>SIGNATURE: _____ DATE: _____</p> <p>TITLE: _____</p> <hr/> <p><b>ACCEPTANCE:</b>                  (GOVERNMENT REPRESENTATIVE)                  NRCS ACCEPTS THIS PRACTICE FOR CREDITABLE.</p> <p>SIGNATURE: _____ DATE: _____</p> <p>TITLE: _____</p>	<p><b>COVER SHEET &amp; LOCATION</b>                  AR-009-01-03, West Pile/Post Irrigation                  Salt River Field Office, Gila Valley NRCD, Graham County, AZ</p> <p style="text-align: center;"><b>NRCS</b>                  National Resources Conservation Service</p> <p style="text-align: right;"><b>JOB CLASS: VI</b></p>														
<b>Arizona Standard Drawing</b>																								
<b>Cover Sheet 3 Construction App</b>																								
<b>Standard Drawing No. AR-009-01-03</b>																								
<b>Date March 2013</b>	<b>Sheet 1 of 1</b>																							



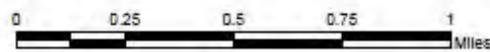
# West Pigeon Pipeline

Customer(s): T LINK RANCH INC and AZGFD  
District: GILA VALLEY NATURAL RESOURCES CONSERVATION DISTRICT

Field Office: SAFFORD SERVICE CENTER  
Agency: USDA-NRCS  
Assisted By: SCOTT STRATTON  
State and County: AZ, GREENLEE



1:24,000





West Pigeon Pipeline Project  
 Draft Design

27-Aug-13

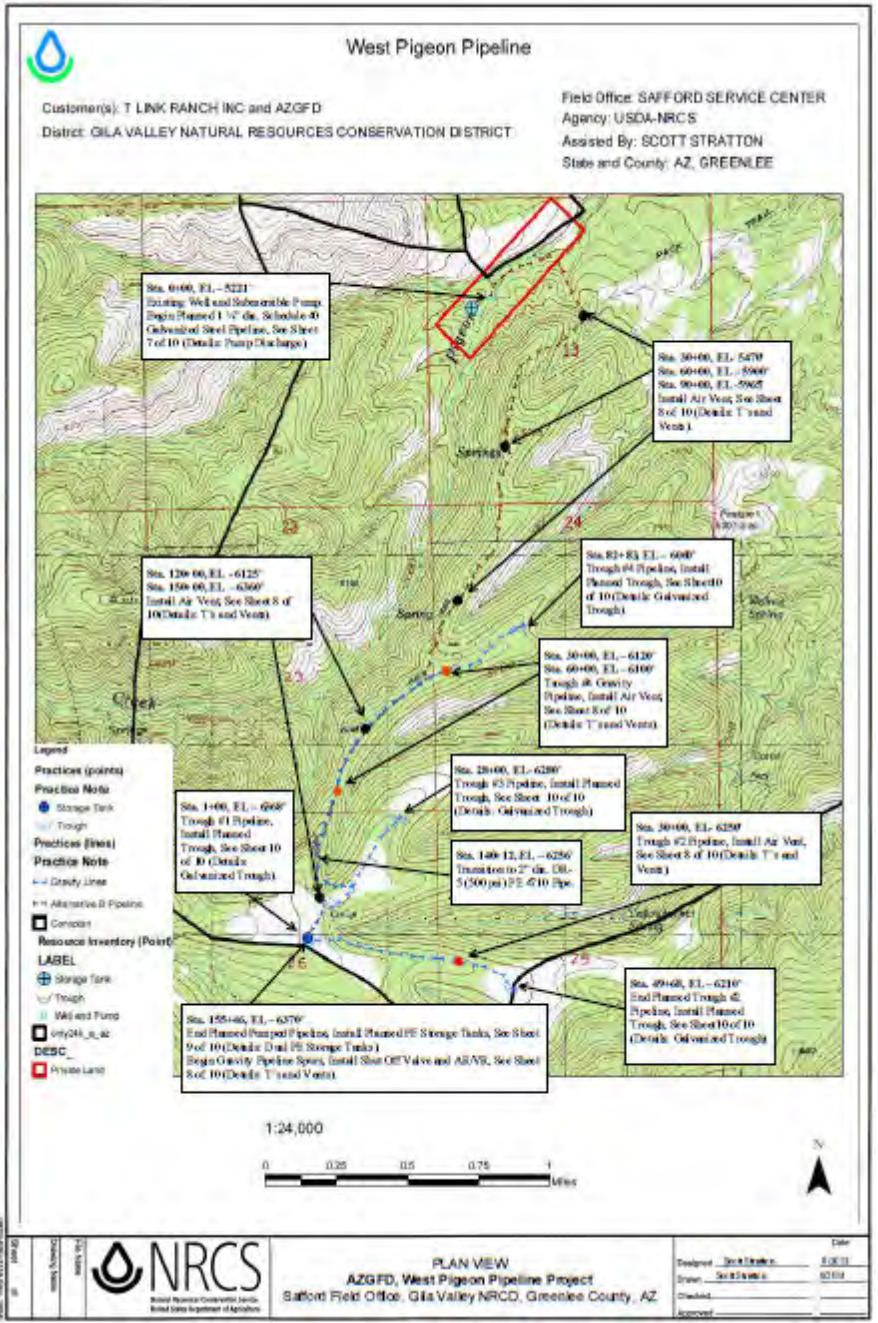
Pumped Portion @ 11.5 gpm (Surface Installation Along Existing Road per USFS In original USFS Decision)	
Pipe Type	Length (ft)
1 1/4" Galvanized Steel Schedule 40	19682
2" HDPE PE 4710 DR-5 500 psi	2359
Total	<u>22041</u>
Trough #1 Gravity (buried)	
1" HDPE PE 4710 DR-11 200 psi	100
Trough #2 Gravity (buried)	
1" HDPE PE 4710 DR-11 200 psi	4973
Trough #3 Gravity (buried)	
1" HDPE PE 4710 DR-11 200 psi	2805
Trough #4 Gravity (buried)	
1" HDPE PE 4710 DR-11 200 psi	2690
1" HDPE PE 4710 DR-9 250 psi	4463
1" HDPE PE 4710 DR-7 333 psi	<u>1130</u>
(Actual length is 8295 ft, 1000 ft of it can be part of Trough #3 Gravity)	8283

All Pipe (Risers) at Planned Troughs and Storages should be new galvanized pipe.

Optional Pumped Pipeline Route (Approved by Clifton Ranger District Carol Telles District Ranger 8/28/13)

1 1/4" Galvanized Steel Schedule 40	14012
2" HDPE PE 4710 DR-5 500 psi	<u>1533</u>
Total	15545





**APPROVAL E-MAIL FROM USFS DATED 8/28/2013**

Scott,

After review of the modified route for the Pigeon Pipeline project, the Forest Service approves this modification.

Thanks,

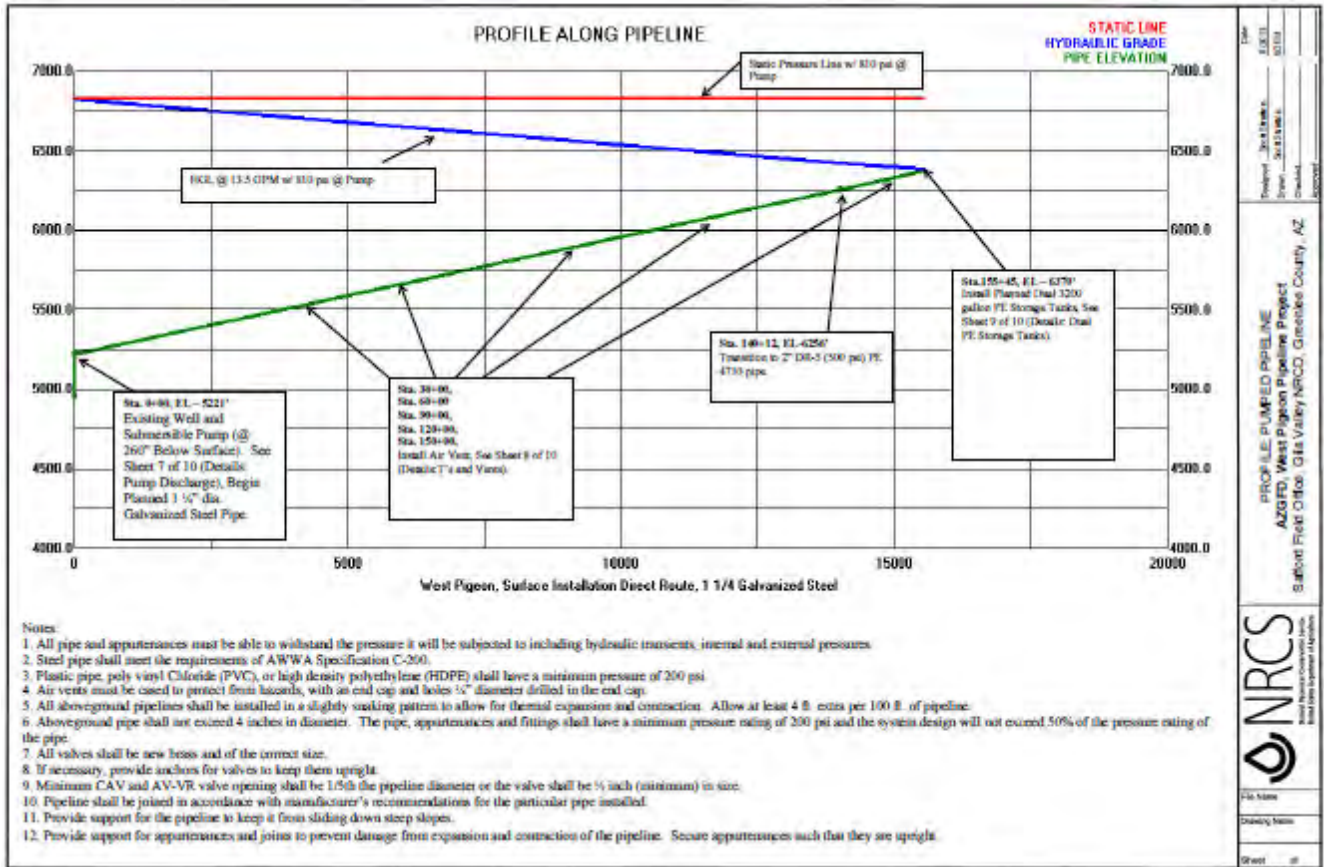
Carol Telles  
District Ranger  
Clifton Ranger District  
Apache-Sitgreaves NFs  
Office: 928-687-8601



Fax: 928-687-1614

Email: [cftelles@fs.fed.us](mailto:cftelles@fs.fed.us)

This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.



NAME: West Pigeon  
 LOCATION: Surface Installation Direct Route  
 KIND OF PIPE: 1 1/4 Galvanized Steel

DESIGNED/DATE: \_\_\_\_\_  
 CHECKED/DATE: \_\_\_\_\_  
 APPROVED/DATE: \_\_\_\_\_

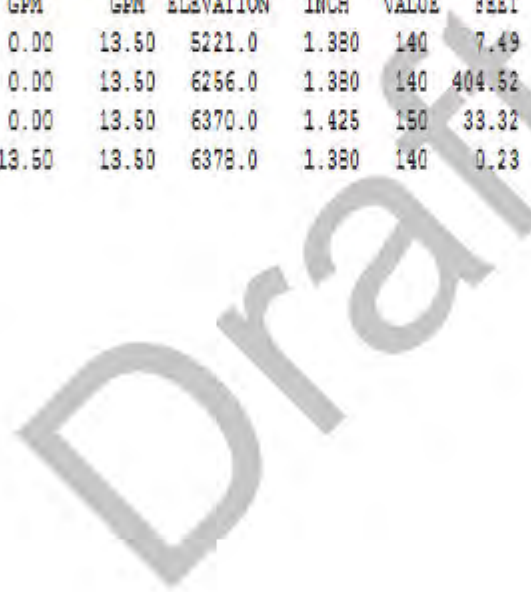
SOURCE PIPE ELEVATION = 4961.0      PRESSURE ELEVATION = 6830.5      SOURCE HYDRAULIC GRADE = 6830.5  
 SOURCE PRESSURE HEAD = 1869.5 FT.      SOURCE STATIC PSI = 810.00      SOURCE HYDRAULIC PSI = 810.00  
 MAX. PIPE PRESSURE = 810.00 PSI      MIN. PIPE PRESSURE = 3.00 PSI      MAX. PIPE VELOCITY = 2.89 FPS  
 PIPE LAYING LENGTH = 15854.4 FT      AVG.FR.LOSS = 2.87 FT/100FT      TOTAL FRICTION LOSS = 445.6 FT

---

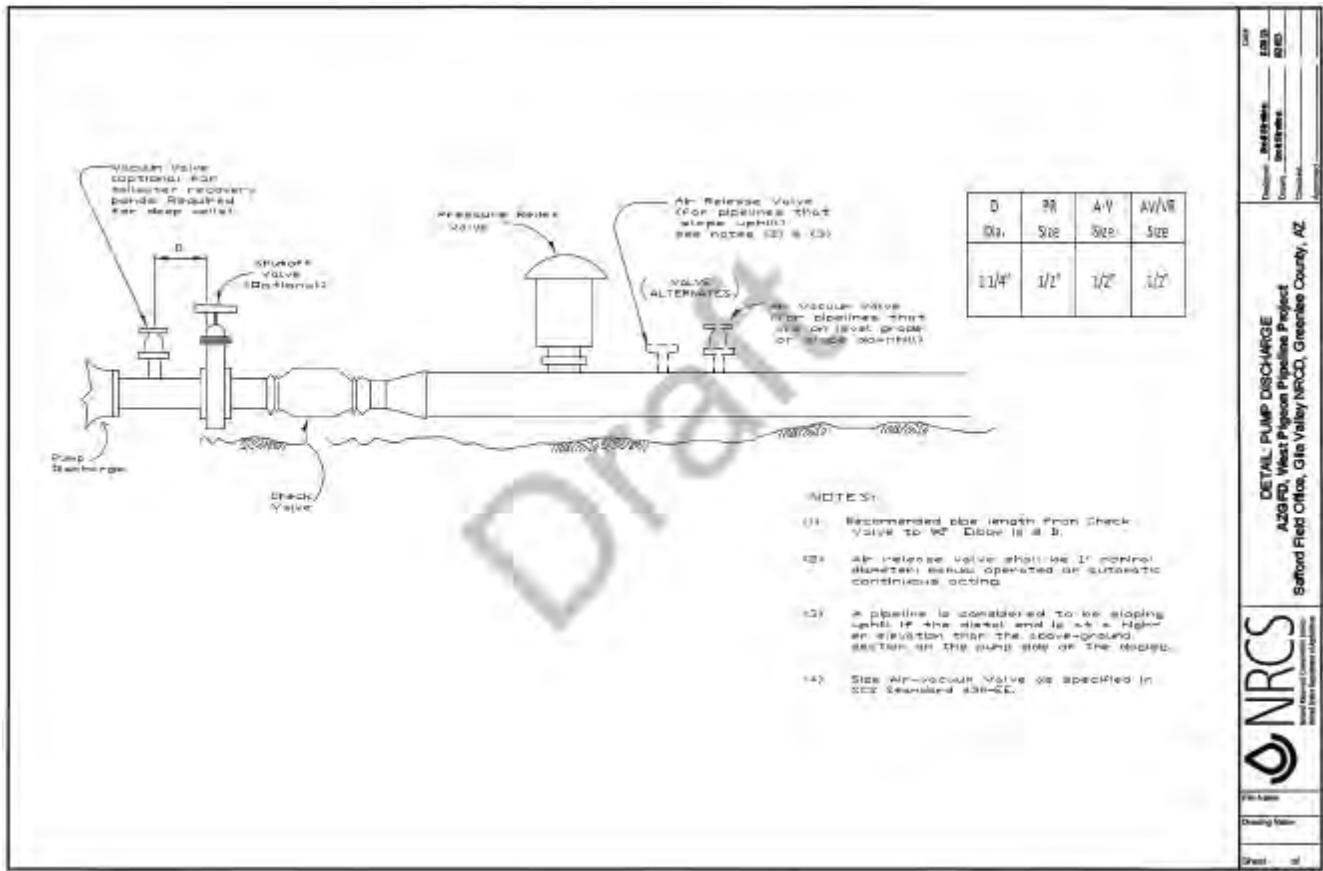
NOTE: PIPE FRICTION LOSSES ONLY

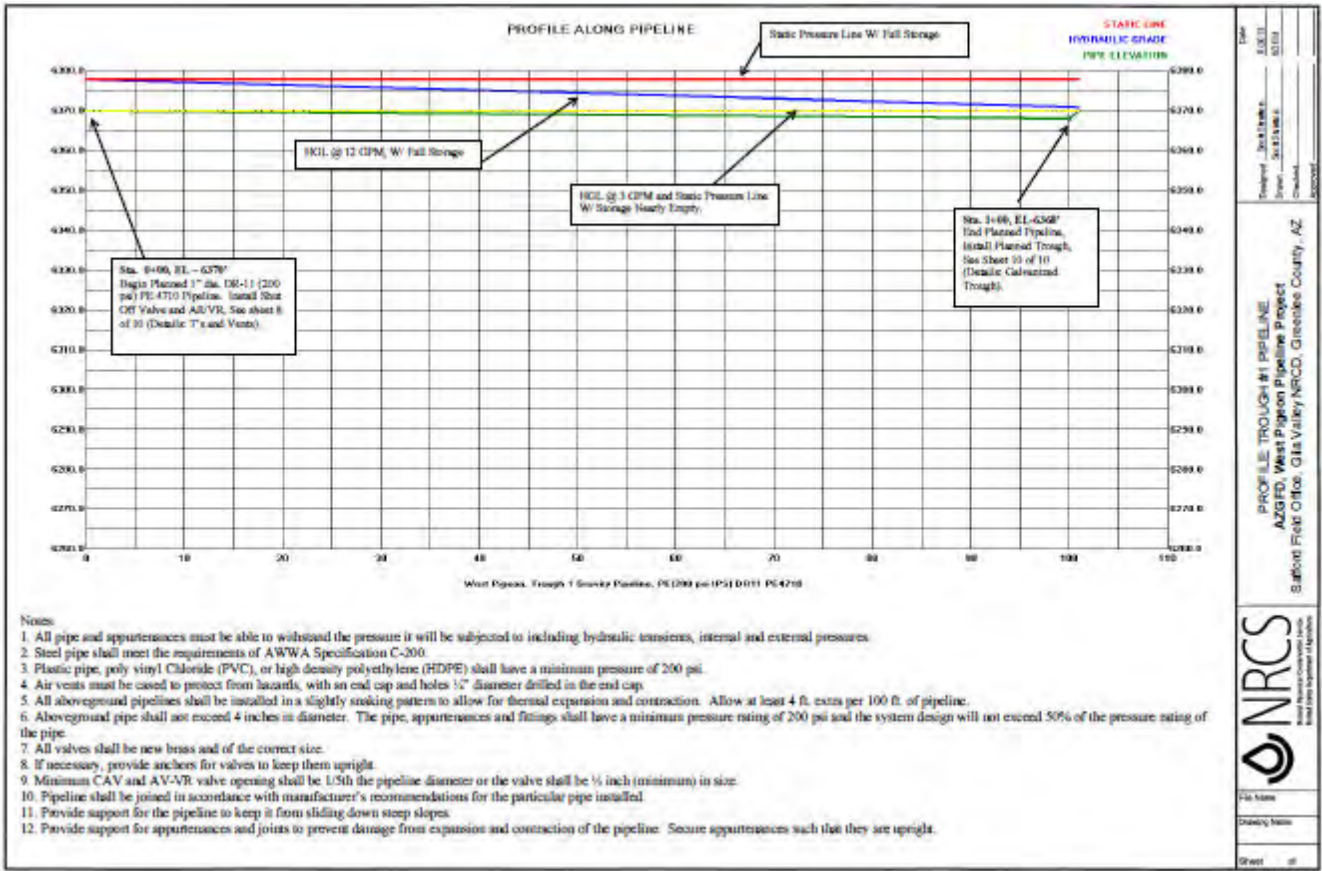
---

SECT. NO.	DISTANCE FEET	TOTAL DISTANCE	SECTION GPM	TOTAL GPM	SECTION ELEVATION	PIPE (ID) INCH	'C' VALUE	FRICTION FEET	H.G.L. ELEVATION	VELOCITY FT/SEC	MIN. PSI	MAX. PSI
1	1.0	1.0	0.00	13.50	5221.0	1.380	140	7.49	6822.99	2.89	694.1	697.3
2	14011.0	14012.0	0.00	13.50	6256.0	1.380	140	404.52	6418.48	2.89	70.4	248.9
3	1533.0	15545.0	0.00	13.50	6370.0	1.425	150	33.32	6385.15	2.71	6.6	199.5
4	1.0	15546.0	13.50	13.50	6378.0	1.380	140	0.23	6384.92	2.89	3.0	196.0

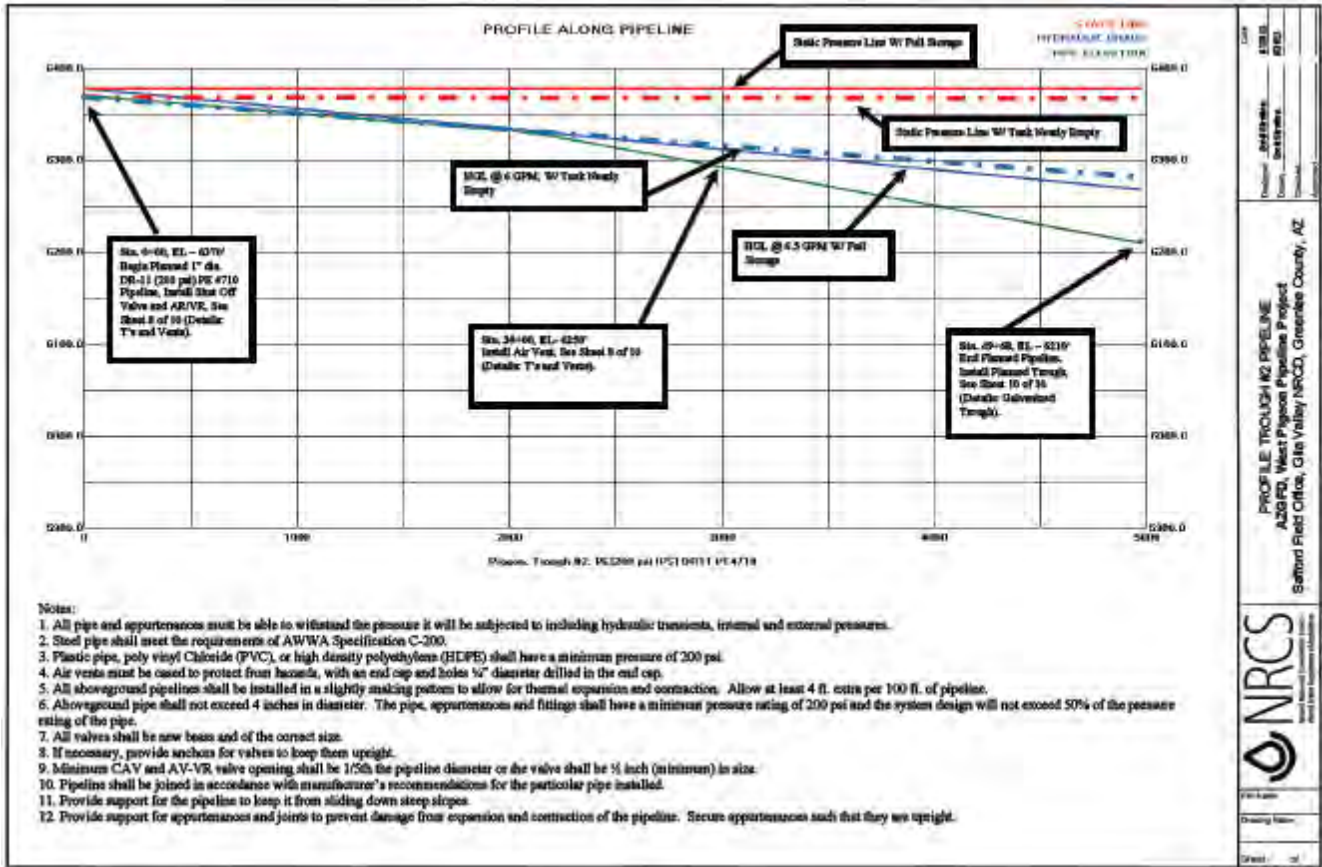


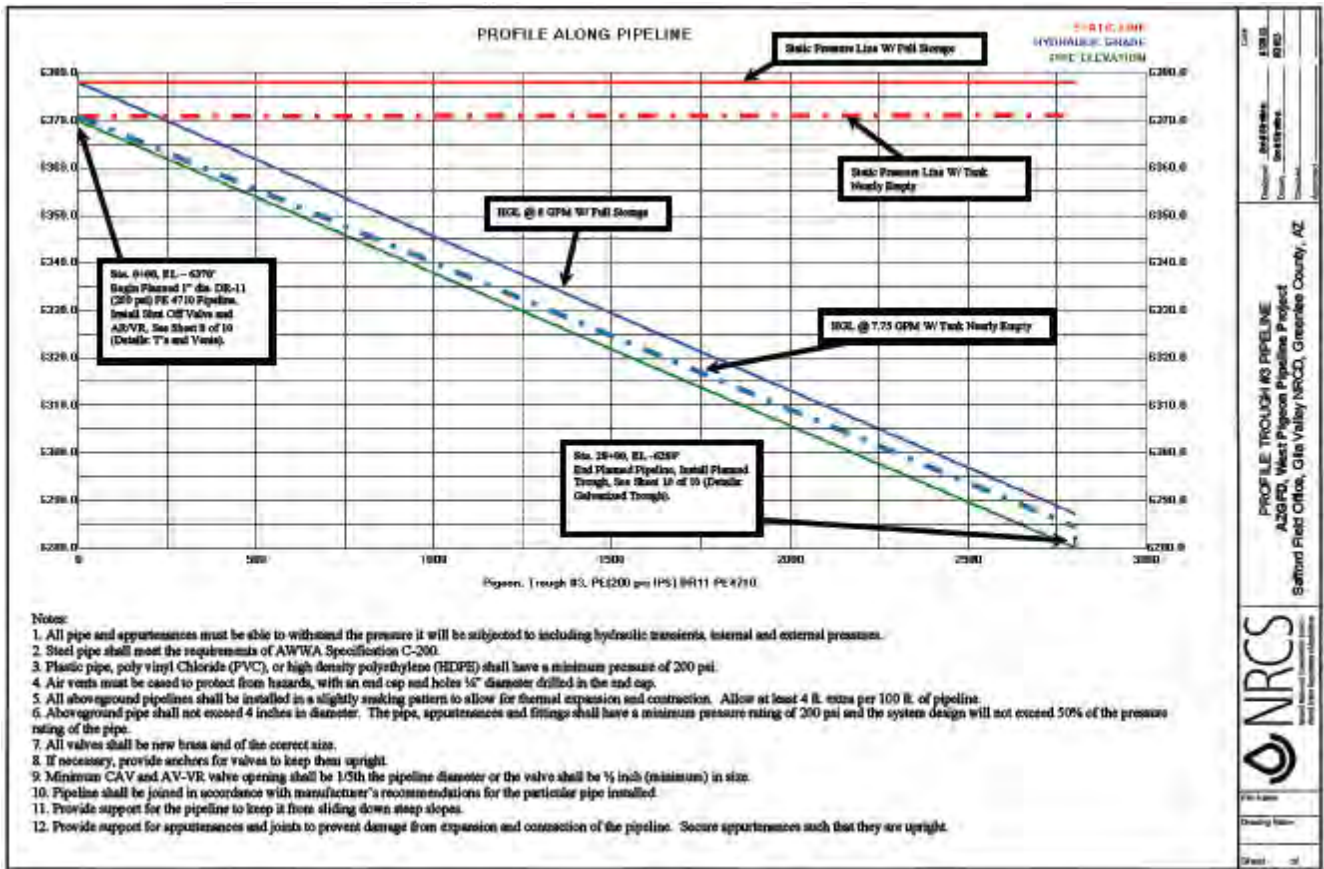




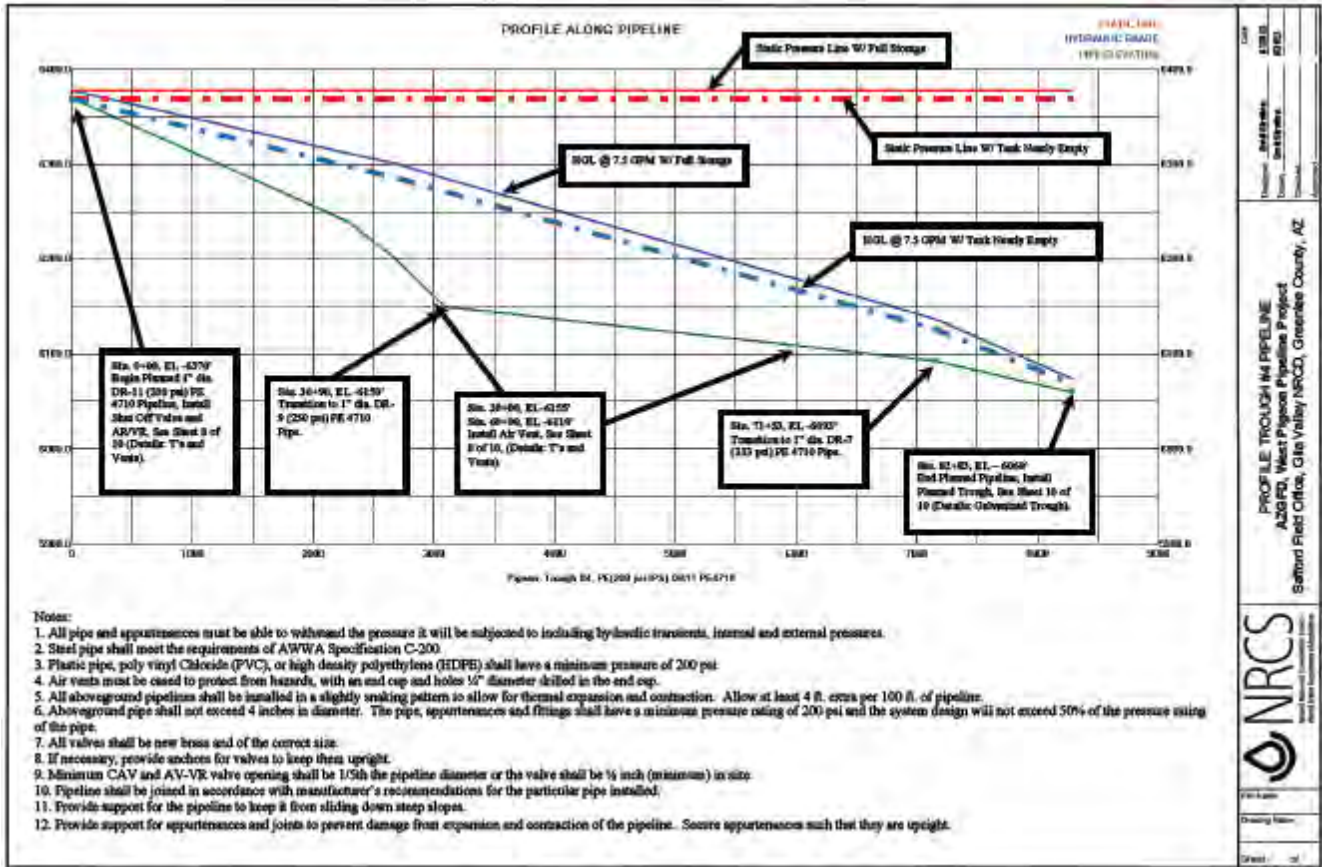


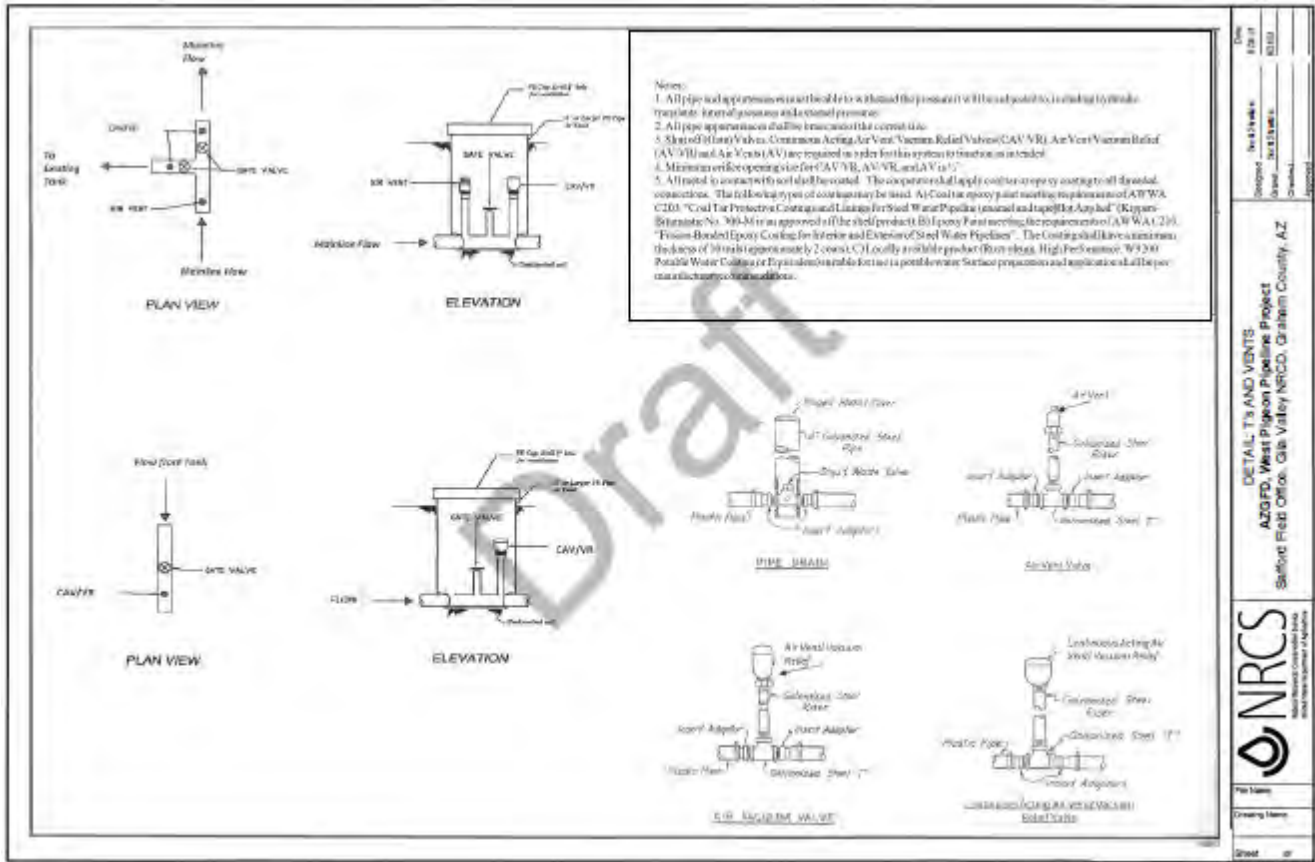
<p>DATE: 2/2/11</p> <p>DESIGNED: J. K. B. S. S.</p> <p>DRAWN: S. B. S. S.</p> <p>CHECKED:</p> <p>APPROVED:</p>	<p>PROFILE TROUGH-IN PIPELINE                  AZGFD, West Pigeon Pipeline Project                  Safford Field Office, Gila Valley NRCO, Greenlee County, AZ</p>	<p><b>NRCO</b>                  National Resource Conservation Office                  United States Department of Agriculture</p>
----------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------











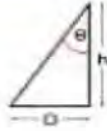
Drawn	1/28/17
Checked	1/28/17
Approved	1/28/17
DETAIL: TANK AND VENTS AZGFPD, West Pigeon Pipeline Project Stafford Field Office, Gila Valley NRCO, Graham County, AZ	
NRCS National Resource Conservation Service United States Department of Agriculture	
File Name	
Drawing Name	
Sheet	26

**Above Ground Tank, Anchor Design Data**

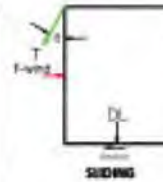
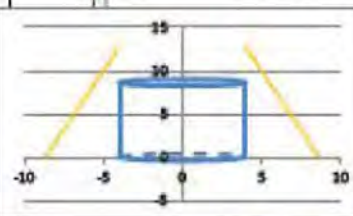
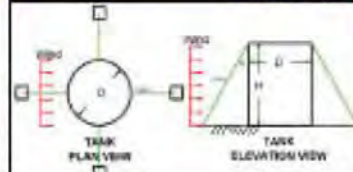
Project: West Pigeon Pipeline Project County: Greene  
 Designer: Scott Stratton Checked: \_\_\_\_\_  
 Date: 8/1/13 Date: \_\_\_\_\_

**Input Data**

<b>Tank</b>		<b>Wind Load (ref. ASCE 7-10)</b>	
Diameter, D =	<u>8</u> ft.	Velocity, $V_w =$	<u>100</u> mph
Height, H =	<u>8.6</u> ft.	<b>Supplemental Ballast (e.g. Rock, Concrete, etc.)</b>	
Self-Weight, DL =	<u>1000</u> lb.	Weight, DLB =	<u>0</u> lb.
Factor of Safety, $F_s =$	<u>1.1</u>		



Cable Attachment	Input	Calculated
Height, h =	<u>12.7</u> ft.	<b>NO, h &gt; H</b> <u>12.7</u> ft.
Offset Distance, O =	<u>5</u> ft.	<u>5</u> ft.
or Angle, $\theta =$	<u>46</u> deg.	<u>22.5</u> deg.



**Structural Stability (Preliminary)**

<b>a. Overturning</b> $0.75 < 1.1$ <b>UNSUPPORTED TANK NOT STABLE</b>	<b>b. Sliding</b> $0.47 < 1.1$ <b>UNSUPPORTED TANK NOT STABLE</b>
-----------------------------------------------------------------------------	-------------------------------------------------------------------------

**Measures to Provide Structural Stability**

<p><b>a1. Cable tensile load to resist Overturning</b>                  Cable Tensile Load = <u>153.6</u> lb.                  Minimum Cable Size Required = <u>1/4</u> in.  <b>Concrete Anchor requirements</b>                  On Ground Surface = <u>15x15x15</u>                  Buried w/Top Flush = <u>15x15x15</u>                  Buried w/1-ft Cover = <u>12x12x12</u>                  Buried w/2-ft Cover = <u>12x12x12</u></p> <p><b>a2. Supplemental ballast (water) of Overturning</b>                  Ballast Depth, <math>D_w =</math> <u>1.8</u> in.                  Approximate Lost Capacity = <u>55.4</u> gal</p>	<p><b>b1. Cable tensile load to resist Sliding</b>                  Cable Tensile Load = <u>2142.4</u> lb.                  Minimum Cable Size Required = <u>1/4</u> in.  <b>Concrete Anchor requirements</b>                  On Ground Surface = <u>36x36x36</u>                  Buried w/Top Flush = <u>36x36x36</u>                  Buried w/1-ft Cover = <u>30x30x30</u>                  Buried w/2-ft Cover = <u>30x30x30</u></p> <p><b>b2. Supplemental ballast (water) for Sliding</b>                  Ballast Depth, <math>D_w =</math> <u>5.2</u> in.                  Approximate Lost Capacity = <u>163.2</u> gal</p> <p><b>b3. Shear pin (T-Post) at Tank Toe for Sliding</b>                  Total T-Posts Recommended, <math>C_t =</math> <u>4</u></p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Support Recommendations**

1. Cable Tie-down with Concrete Block Anchor: _____	USE Method b1 w/one of the suggested Anchors
2. Water Ballast: _____	USE 5.2-in of Water per Method b2
3. T-Posts per Method b3: _____	In conjunction w/Method a1 or a2